

2.0 ERRATA—EDITS TO THE DEIR

The following corrections and/or clarifications have been made to the DEIR text. These include minor corrections to improve writing clarity, grammar, typographical errors, and consistency; updated information, corrections or clarifications in accordance with specific responses to comments, as described in Chapters 4.0 through 7.0 of this document; or staff-initiated text changes to incorporate clarifying information in the EIR. Changes to Section 3.2 of the DEIR include clarifications related to the terrestrial Biological Opinion (BO) issued by USFWS. Section 3.3 of the DEIR has been updated to reflect revisions to the FERC Staff Alternative made by FERC between the release of the Draft Environmental Impact Statement (DEIS) and the Final Environmental Impact Statement (FEIS). Revisions (itemized below) are organized by the chapter, section, and page number that appear in the DEIR. Deletions are indicated by “~~cross-out~~” text and new text is indicated by underlined text. Changes were made in the following chapters of the DEIR:

- Executive Summary;
- Chapter 3.0, Description of Existing Facilities and Operations, The Proposed Project, and Alternatives;
- Chapter 4.0, Existing Conditions;
- Chapter 5.0, Environmental Impacts;
- Chapter 6.0, Other Statutory Requirements;
- Chapter 9.0, Distribution List; and
- Chapter 11.0, Literature Cited.

EXECUTIVE SUMMARY

ES.5 OTHER APPROVALS, page ES-5:

~~DWR has contacted DFG regarding compliance with CESA, and it is anticipated that DFG will issue a consistency determination pursuant to Section 2080.1(c) of the Fish and Game Code.~~ DWR will address DFG determinations on consistency with CESA, pursuant to Section 2080.1 of the Fish and Game Code, with the federal biological opinions issued for this project after receipt of all determinations and prior to implementation of any approved measures.

ES.9 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED, page ES-17:

During public scoping, ~~and the ALP process,~~ and review of the DEIR by agencies and the public, a number of substantive comments were received stating concerns about

various issues, most of which have been resolved. Areas of remaining controversy are: protection and management of cultural resources (particularly at the Foreman Creek Car-top Boat Ramp), water temperature for agricultural diversions, trail use designations, socioeconomics, impacts on Butte County such as costs for road maintenance, global climate change, public safety, and public health. These issues were considered during the ALP development of the SA Articles and Sections that are incorporated in the Proposed Project, and responses to individual comments provided during review of the DEIR are provided in Chapters 4.0 through 7.0 of this document.

Agencies such as Butte County did not sign the SA, and continue to express concern with the operation of the Oroville Facilities. However, public controversy over the environmental effects of a project alone is not an environmental issue requiring analysis under CEQA (CEQA Section 21082.2[b]). As required by CEQA, this FEIR addresses potentially significant environmental effects based on substantial evidence in the record.

CHAPTER 3.0 DESCRIPTION OF EXISTING FACILITIES AND OPERATIONS, THE PROPOSED PROJECT, AND ALTERNATIVES

Section 3.2.3.1 Draft Biological Assessment Measures, page 3.2-11:

In 2004, DWR entered into informal consultation with USFWS to resolve issues related to terrestrial listed species prior to the initiation of formal consultation and FERC license application filing. Several of the measures were identified for early implementation (under the existing FERC license) to minimize or avoid take of federally listed species related to ongoing project activities. ~~These measures include the identification of a listed species coordinator within DWR, measures pertaining to the giant garter snake, measures pertaining to the bald eagle, and measures pertaining to the vernal pool-related species. These measures are described in a draft BA (see Appendix E of the PDEA), covering terrestrial resources, and have been implemented. In April 2007, USFWS issued a final BO for FERC Relicensing of the Oroville Facilities. The BO determined that the project as proposed is not likely to jeopardize the continued existence of the five federally listed species covered by the opinion. The BO further concluded that the reasonable and prudent measures and accompanying terms and conditions of the biological opinion are consistent with the relicensing Settlement Agreement.~~

The BO clarifies and amplifies avoidance/protective measures contained in the Biological Assessment (see Appendix E of the PDEA). These measures include the identification of a listed-species coordinator within DWR as well as avoidance and protective measures for bald eagle, giant garter snake, vernal pool fairy shrimp, vernal pool tadpole shrimp, and valley elderberry longhorn beetle. Given that DWR was required to begin implementing environmental protective measures immediately (under the existing FERC license), USFWS made some of the BO terms and conditions effective immediately. In addition to species protective measures, the BO also identified take limits and mitigation requirements.

Section 3.2.3.3 Feather River Fish Hatchery Operations, pages 3.2-12 and 3.2-13:

The Fish Barrier Dam diverts fish into a ladder leading to the hatchery. All fish are stopped at the dam. In recent years, adaptive management principles have been incorporated into hatchery operations to reduce impacts on Feather River salmon and steelhead. This has resulted in numerous changes in hatchery operations, and this is likely to continue for quite some time. Currently, the fish ladder remains open throughout the spring, and adult salmon returning during this time are marked with an external tag/mark. The ladder is then closed until ~~Fish ladder operations to allow entry of adult spring-run Chinook salmon have changed in recent years. When the gates are open, upstream migrating fish can move into the 0.5-mile-long ladder leading to the hatchery. Before 2003, the fish ladder gates were generally opened on or about September 1, when it is re-opened to allow adult spring-run Chinook salmon to enter the hatchery. Salmon that were marked during the spring are spawned as “spring-run” Chinook salmon, and these eggs are held separately from those that will be taken later in the fall. The early entries were ready for spawning in October. Fish entering the hatchery in the latter portion of September (the exact cut-off date has varied somewhat from year to year) were considered fall-run Chinook salmon. Since 2003, however, the fish ladder has opened during May and June to allow early entry of spring-run Chinook salmon. These early-arriving spring-run Chinook salmon are counted, tagged, and released back into the river. When these tagged salmon re-enter the hatchery in the fall, they can be distinguished and spawned separately from fall-run Chinook salmon. The eggs taken from Chinook salmon later in the fall comprise the “fall-run.”~~

~~All salmon adults entering the hatchery are retained for egg taking or fertilization. The entire process of egg/milt collection, fertilization, incubation, rearing, and holding of fry, fingerlings, and yearlings is conducted within the Feather River Fish Hatchery facilities. As fish reach the end of the ladder, they swim into the gathering tank, and a mechanical sweep moves the fish into the spawning building. Salmon and steelhead that are not ready to be artificially spawned are moved to one of four circular holding tanks. The main hatchery building houses the spawning operation and incubators.~~

Unlike Chinook salmon, not all adult steelhead die after spawning; therefore, adult steelhead that have spawned at the hatchery are released. The fish ladder gate is open continuously through the fall and winter, as long as fish with viable eggs ascend the hatchery ladder. Hatchery steelhead are reared to the yearling stage and released in the Feather River. All steelhead fish produced in the Feather River Fish Hatchery are marked with an adipose fin clip. The external fin clip allows anglers to determine quickly whether the fish is of hatchery origin and can be kept. ~~The hatchery also marks a percentage (currently about 10 percent) of its steelhead and spring- and fall-run Chinook salmon using coded wire tags. Each year, approximately 9,000–18,000 salmon and 2,000 steelhead are artificially spawned, a process that produces 18–20 million eggs. Salmon and steelhead are raised at the hatchery then transported in oxygenated, temperature-controlled tanks for release in the Feather and Sacramento Rivers, in Lake Oroville and other California reservoirs, and in San Pablo Bay near San Francisco Bay.~~

As a method to monitor Feather River Fish Hatchery salmon, DWR tags a percentage of them with coded wire tags, microscopic tags that are embedded into the nose cartilage of the fish. These tags are recovered from a variety of sources, such as from fish studies and salvage operations in the Sacramento–San Joaquin Delta, from the sport and commercial ocean fisheries, from the Feather River Fish Hatchery during spawning operations, and from salmon carcass surveys in the Feather River.

A variety of coldwater fish have been stocked in Lake Oroville since its creation in 1968, including various strains of rainbow and brown trout, kokanee salmon, coho salmon, Chinook salmon, lake trout, and brook trout. DWR became involved with Lake Oroville fish stocking in 1993, and expanded the Feather River Fish Hatchery in 1998 to enhance these activities. DWR coordinates all coldwater fish stocking activities with the DFG and NMFS. DWR convenes a public meeting each spring to discuss the upcoming coldwater fish stocking activities with members of the public and other interested agencies. Since 2000, numerous problems have occurred with coldwater fish diseases, necessitating extensive disease management efforts. As a result, the Feather River Hatchery has an ongoing disease monitoring program. These This program includes a cessation of stocking Chinook salmon and brown trout. and the current-Currently, DWR practice of using domesticated strains of uses coho salmon to supplement the sport fishery from the Pacific Northwest. In addition, DWR is experimenting with the stocking of steelhead in Thermalito Afterbay, which not only supplements the Lake Oroville stocking program, but may also serve as a backup stocking program in years when coho are not available for Lake Oroville.

Section 3.2.3.5 Sport Fishery Operations, page 3.2-15:

DWR manages a cold and warmwater sport fishery in Lake Oroville. DWR funds a full-time fishery biologist and a salmonid stocking program ~~and prepares 90-day and quarterly reports to FERC.~~ Habitat improvements for warmwater game fish are made on an annual basis, include including the construction of brush shelters construction, and the planting of flood-tolerant trees such as willows and/or buttonbush. ~~slips and annual grasses, and installation and operations and maintenance (O&M) for irrigation systems and channel catfish spawning structures.~~

Section 3.2.3.6 Oroville Wildlife Area Facilities, page 3.2-15:

~~DWR also maintains fishing platforms and fish cleaning stations at various locations within the OWA.~~

Section 3.2.3.7 Oroville Wildlife Area Operations, page 3.2-16:

DFG is responsible for providing staff to manage and operate the OWA and sets guidelines for public use of this area. This area had full-time staff assigned until March 1, 2004, when DFG management reassigned the staff to other State Wildlife Areas in response to State budget cuts. In 2006, DWR began providing funds to DFG (e.g., staffing, vehicles, equipment) for OWA operations and maintenance, as well as increased law enforcement. DFG allows public use from 1 hour before sunrise to 1 hour

after sunset in some portions of the OWA. A~~is a~~ designated area for overnight camping allows for a maximum stay of 14 nights in any calendar year, and no more than 7 consecutive nights. Enforcement of these hours or stay limits has been difficult. DFG periodically conducts controlled burning to reduce fuel loading in various locations, primarily around Thermalito Afterbay and DFG and DWR have constructed and maintain fuel breaks in several locations to reduce the potential for spread of wildfire.

Section 3.2.4.1 Recreation Facilities

Equestrian, Bicycle, and Hiking Trails, page 3.2-18:

The Oroville Facilities include miles of trails offering diverse user groups with opportunities to walk, hike, bicycle, or horseback ride. Representatives and organizations of some user groups have cooperatively helped managing agencies with the planning and maintenance of many of these trails. Figures 3.2-4 and 3.2-4a ~~is are~~ a maps showing the existing trails within the project boundary. The Dan Beebe Trail and the Brad Freeman Trail are two of the more popular trails in the project area.

The Dan Beebe Trail is a 14.3-mile trail that is currently designated for equestrian and hiking use. The trail is commonly used by joggers and hikers and provides both difficult and easy terrain as it winds past the Diversion Pool and Lake Oroville. Restroom facilities and trailheads are dispersed along the route.

The 41-mile Brad Freeman Trail encircles Thermalito Forebay, Thermalito Afterbay, and the Diversion Pool, and crosses the crest of Oroville Dam. It was ~~constructed~~ designated in the mid-1990s as a mountain bicycle trail when DWR undertook FERC-ordered construction of several connecting segments to create a loop. Some sections of this loop are gravel and dirt roads, historically accessible to all user groups. This loop also became popular with equestrians, although currently some portions in the LOSRA are closed to stock, and now has portions considered multi-purpose. There are about a dozen popular or marked access points, many at other popular project recreation sites, from which trail users can stage. The mostly unpaved trail provides scenic off-road recreation, while some short sections are along paved roads and can be used by less-specialized bicycles. More than 30 miles of the trail are flat but include some rolling terrain; steep grades can be found on either side of Oroville Dam. The Brad Freeman Trail has periodically been used for ~~downhill and cross-country~~ mountain-bicycle races.

Figures 3.2-4 and 3.2-4a, Existing Trails in the LOSRA:

Figures 3.2-4 and 3.2-4a, “Existing Oroville Facilities Trails ~~in the LOSRA,~~” have been revised to reflect current trail designations in the FERC Project boundary. The revised figures are shown beginning on page 2-7 of this FEIR.

Spillway Recreation Area at Oroville Dam, pages 3.2-23 and 3.2-24:

The Spillway Recreation Area at Oroville Dam has the largest boat launching facility on Lake Oroville. A 12-lane ramp with more than 800 parking spaces, renovated in 2002, is used during periods of high lake level; an 8-lane second-stage ramp is used during

low-water periods. This site also provides limited day use activities, en-route camping, and opportunities for picnicking and bicycle riding. The Potter's Ravine Trail, extending part way up the North Fork arm of Lake Oroville, commences from this parking area.

Saddle Dam Day Use Area, page 3.2-25:

This trailhead is located in the southeastern portion of the project area, and provides direct access to the Dan Beebe Trail, Bidwell Canyon Trail, and Loafer Creek Loop Trails. From the latter, the Roy Rogers Trail can also be easily reached. This primarily equestrian-use trailhead is located in the southeastern portion of the project area.

Dispersed Recreation Sites in the OWA, page 3.2-26:

Other recreation areas in the OWA include dispersed recreation (hunting, fishing, and bird watching), model aircraft grounds, a boat launch on the Feather River, and a designated primitive camping area with minimal amenities for users. Equestrian and bicycle use in the OWA is limited to roads open to vehicles; equestrians and their stock are also allowed within 25 feet of any exterior OWA boundary fence.

Section 3.2.4.2 Recreation Operations and Maintenance, page 3.2-26:

The LOSRA, managed cooperatively by DPR, includes Lake Oroville and the surrounding lands and facilities within the project area, as well as the land and waters in and around the Diversion Pool and Thermalito Forebay, downstream of Oroville Dam. Additional recreational facilities and opportunities exist within the project area but outside the LOSRA, specifically at Thermalito Afterbay, the OWA, and the Feather River Fish Hatchery. Each of these areas is managed by DFG in a similarly cooperative fashion. In all cases, recreation facilities within the FERC Project boundary are regarded by FERC as the ultimate responsibility of the Licensee.

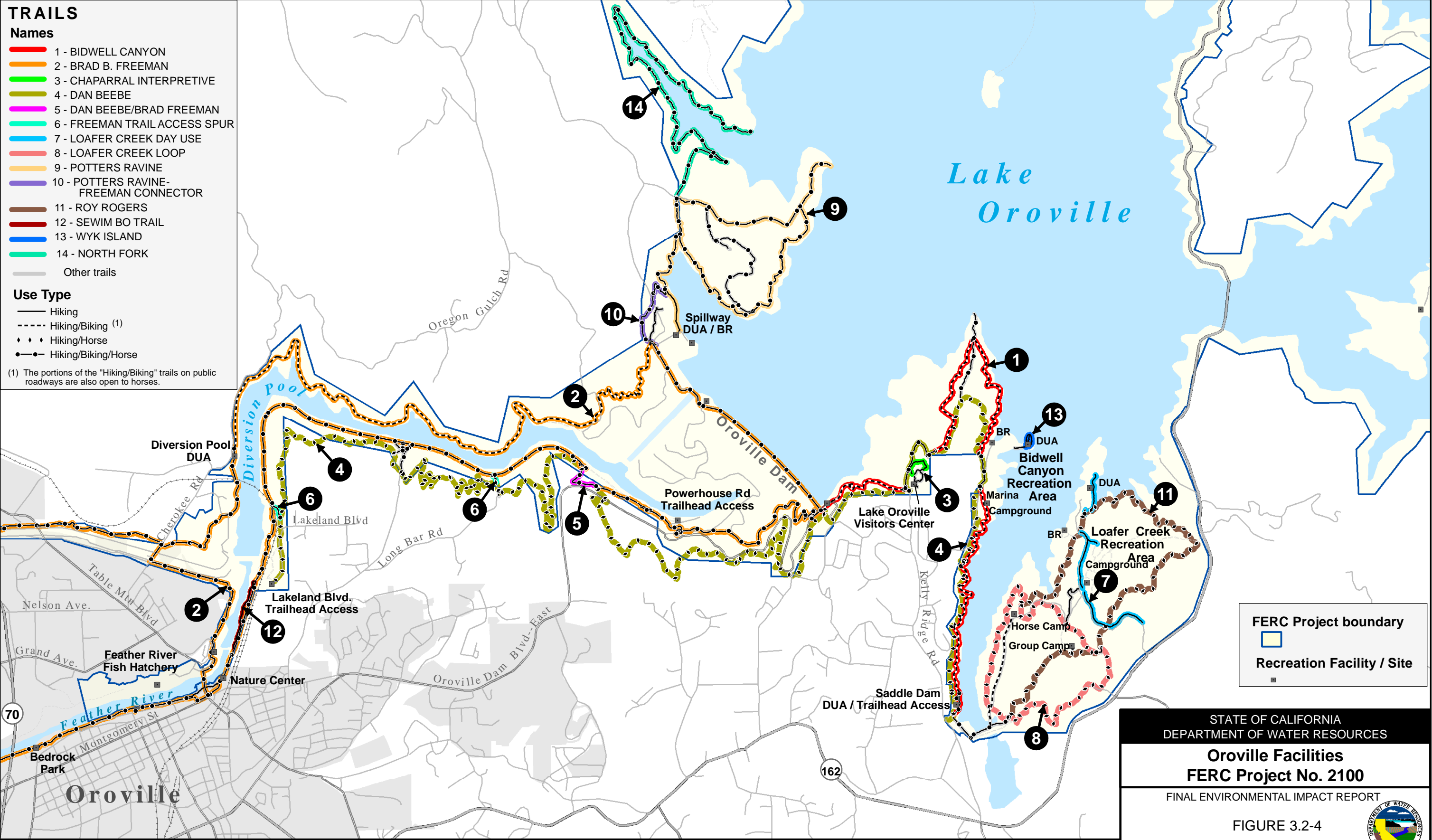
Section 3.3.1 No-Project Alternative, page 3.3-1:

The No-Project Alternative includes all existing facilities and operations as described in Section 3.2, key conditions of the existing FERC license, environmental commitments such as those associated with DWR's water rights, recreation programs, and other agreements that affect current Oroville Facilities operations. One such agreement is the concessionaire contract between DPR and the operators of the Lake Oroville Marina. In the most recent contract, the marina operators agreed to the following language:

Successful incumbent will provide a transportation link (shuttle service) between a designated point or points of the North Fork arm of Lake Oroville to the Lake Oroville Marina. This service is intended for the use of fare-paying whitewater boaters and other recreationists with the objective that fares will allow the concessionaire to recover the cost of providing the service. Service may be reservation-based (charter arrangement) but must be available to reserve and operate a minimum of four days per week, including all weekends and holidays, during periods when all of the following conditions occur:

TRAILS

- Names**
- 1 - BIDWELL CANYON
 - 2 - BRAD B. FREEMAN
 - 3 - CHAPARRAL INTERPRETIVE
 - 4 - DAN BEEBE
 - 5 - DAN BEEBE/BRAD FREEMAN
 - 6 - FREEMAN TRAIL ACCESS SPUR
 - 7 - LOAFER CREEK DAY USE
 - 8 - LOAFER CREEK LOOP
 - 9 - POTTERS RAVINE
 - 10 - POTTERS RAVINE-FREEMAN CONNECTOR
 - 11 - ROY ROGERS
 - 12 - SEWIM BO TRAIL
 - 13 - WYK ISLAND
 - 14 - NORTH FORK
- Use Type**
- Hiking
 - Hiking/Biking (1)
 - Hiking/Horse
 - Hiking/Biking/Horse
- (1) The portions of the "Hiking/Biking" trails on public roadways are also open to horses.



Source: DWR 2007



Scale 1 : 36,000
1" = 3000 feet



FERC Project boundary
Recreation Facility / Site

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

Oroville Facilities
FERC Project No. 2100

FINAL ENVIRONMENTAL IMPACT REPORT

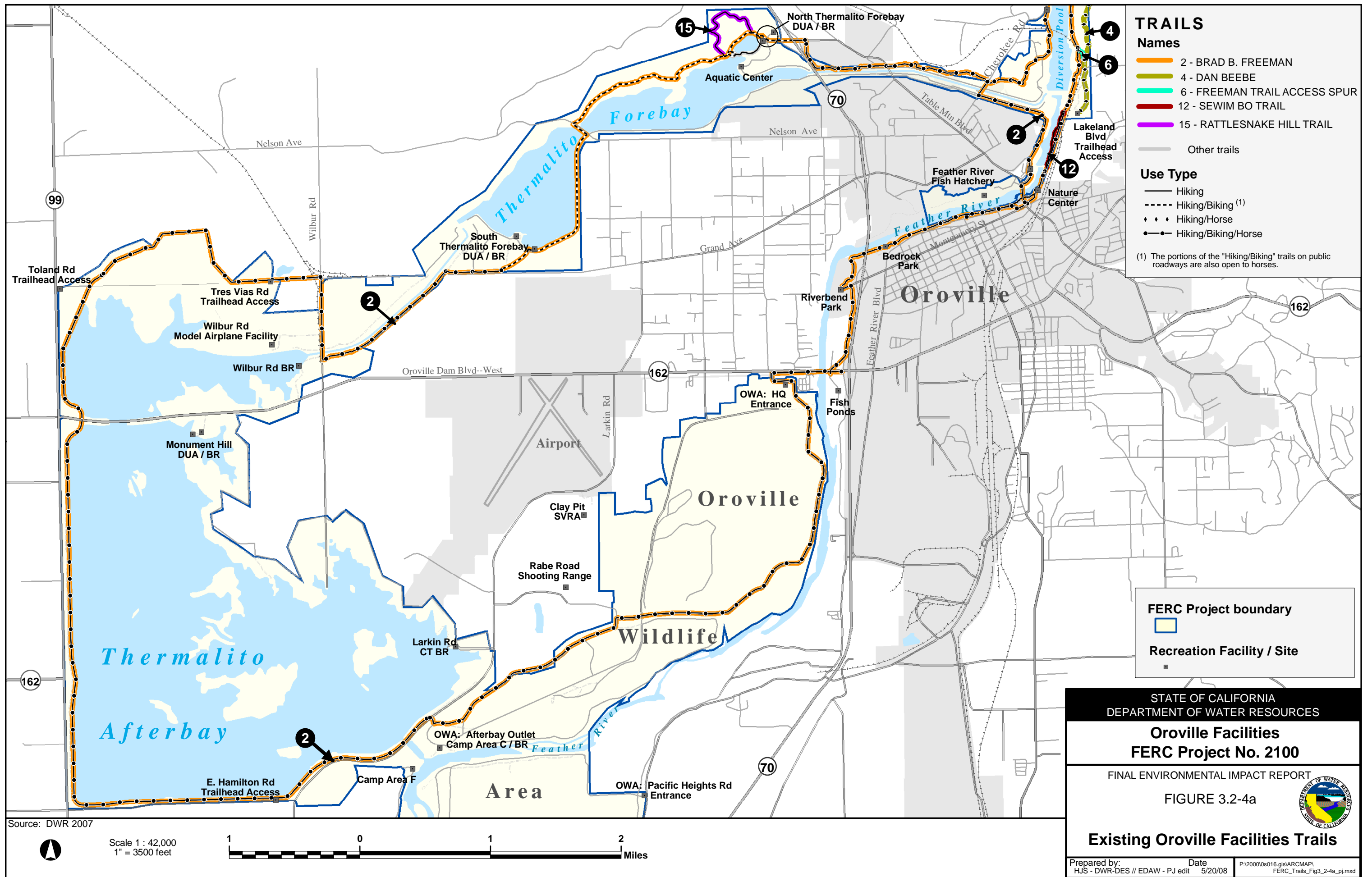
FIGURE 3.2-4



Existing Oroville Facilities Trails

Prepared by: HJS - DWR-DES // EDAW - PJ edit Date: 3/17/08
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- Lake Oroville is below 800 feet water surface elevation;
- Flow in the North Fork Feather River, immediately upstream from Lake Oroville, exceeds or is predicted to exceed 400 cfs; and
- During the months of May through November, inclusive.

Other details of service provision, such as frequency and scheduling of the service and designation of pick-up points, may be determined by the successful incumbent based upon user input and demand and reasonable use of concessionaire resources. Future continuation of this shuttle service is contingent upon demonstrated use and feasibility of the service, to be reviewed after 2 years, and then every 2 years thereafter.

Thus, the shuttle service becomes a part of the No-Project Alternative. The No-Project Alternative also This includes interim measures implemented by DWR during the ALP collaborative effort and further described in Section 3.3.1.1 below. These conditions and measures would continue to affect operations in the future under the No-Project Alternative.

Section 3.3.1.2 Actions Taken to Comply with Draft Biological Assessment, page 3.3-3:

DWR entered into informal consultation with USFWS to resolve terrestrial listed species issues prior to the initiation of formal consultation to be conducted after license application filing. USFWS recommended four measures for early implementation (under the existing FERC license) to minimize or avoid take of federally listed species related to ongoing project activities. ~~These measures include the identification of a listed species coordinator within DWR, measures pertaining to the giant garter snake, measures pertaining to the bald eagle, and measures pertaining to the vernal pool-related species. These measures are described in a draft BA (see Appendix E of the PDEA), covering terrestrial resources, and are included in the No-Project Alternative.~~ In April 2007, USFWS issued a final BO for FERC Relicensing of the Oroville Facilities. The BO determined that the project as proposed is not likely to jeopardize the continued existence of the five federally listed species covered by the opinion. The BO further concluded that the reasonable and prudent measures and accompanying terms and conditions of the BO are consistent with the Relicensing Settlement Agreement.

The BO clarifies and amplifies avoidance/protective measures contained in the Biological Assessment (see Appendix E of the PDEA). These assessments contain avoidance and protective measures for bald eagle, giant garter snake, vernal pool fairy shrimp, vernal pool tadpole shrimp, and valley elderberry longhorn beetle. Given that DWR was required to begin implementing environmental protective measures immediately (under the existing FERC license), USFWS made the BO terms and conditions effective immediately. In addition to species protective measures, the BO also identified take limits and mitigation requirements.

Section 3.3.2.3 Environmental Facilities and Operations

Recreation Facilities—Equestrian, Bicycle, and Hiking Trails, page 3.3-29:

The Proposed Project identifies a number of trail segment enhancements and additional short shoreline access trails to be constructed throughout the Project area. Figures ~~3.2-3~~ 3.2-4 and 3.2-4a, “Existing Oroville Facilities Trails in the LOSRA,” in Section 3.2 shows the existing and proposed trail system at the Oroville Facilities. In addition to the actions described below, the Proposed Project includes minor grading improvement to an old construction road at the Lake Oroville scenic overlook on SR 162 and enhancements to trailhead facilities such as horse-watering troughs and hand-washing sinks at Saddle Dam and Lakeland Boulevard locations.

Trails in the Low Flow Channel/Feather River Area, page 3.3-30:

The Proposed Project includes a feasibility investigation for constructing a new 2- to 4-mile trail designed primarily for bicycling that would run east/west from Lakeland Boulevard, connecting with a multiple-use segment of the Dan Beebe Trail and/or Brad Freeman Trail near the Diversion Pool. A paved trail from the Fish Hatchery downstream to the FERC Project boundary could also be constructed, provided that another recreation agency ~~completes~~ constructs a paved trail on the north side of the Feather River from Riverbend Park north to the FERC Project boundary. The Proposed Project would open the Dan Beebe Trail to bicycle use (except the Sycamore Hill trail segment) and would open Burma Road and adjacent portions of the Brad Freeman Trail to equestrian use. The Proposed Project would also consider new non-motorized trail opportunities in Thermalito Forebay (North and South) as a component of the proposed trails program included in the RMP.

3.3.3 FERC Staff Alternative, page 3.3-40

After evaluating DWR’s Proposed Action (the SA), including mandatory conditions filed pursuant to Section 4(e) and 18 of the Federal Power Act (FPA), and other recommendations from resource agencies and interested entities under Sections 10(a) and 10(j) of the FPA, FERC staff identified additional measures FERC considers necessary or appropriate for continued operation of the project (FERC 2006). The measures are, for the most part, revisions to articles contained within the SA. However, sufficient differences between DWR’s Proposed Project and the FERC Staff Alternative warrant an evaluation as a separate alternative in this DEIR.

The FERC Staff Alternative includes nearly all of the measures described in the Proposed Project, including the SA RMP and the draft HPMP. However, the FERC Staff Alternative does not include the Appendix B actions because they are considered outside of FERC jurisdiction and/or suggest actions with no nexus to the Project. The FERC Staff Alternative does not include the HEA, nor does the FERC DEIS analyze this agreement as part of the Proposed Project. The FERC Staff Alternative does not recommend that DWR provide funding associated with the July 4th fireworks displays at Lake Oroville as described in the RMP because the measure does not appear to have a

clear project nexus. In addition, the FERC Staff Alternative does not analyze the proposed 50-year license term. Additional measures proposed by FERC staff are described below. Unless noted, the FERC Staff Alternative is otherwise the same as the Proposed Project.

The FERC Staff Alternative includes a requirement by DWR to develop a fuel load management plan for National Forest System lands within the Project Boundary; a plan to continue reseedling, as necessary, the downstream face of Oroville Dam; and a threatened and endangered species implementation plan that would describe how DWR would comply with terms and conditions contained within the USFWS biological opinion. While these plans will likely lead to future actions that would be subject to CEQA environmental review prior to implementation, the preparation of plans themselves does not result in a physical change to the environment, and thus the plans are not ready for project-specific CEQA analysis at this time. Additional measures proposed by FERC staff are described below. Unless noted, the FERC Staff Alternative is otherwise the same as the Proposed Project.

Section 3.3.3.3 Environmental Facilities and Operations

Gravel Supplementation and Improvement Program (SA Article A102), page 3.3-41:

The FERC Staff Alternative would revise SA Article A102 to include a provision to monitor 10 riffles every 5 years on a rotating basis or after a high-flow event, to develop a common definition of median size ranges of gravels to benefit Chinook salmon and steelhead and to assess the adequacy of the volume of gravel used, and replace gravel as necessary. If monitoring of 10 sites, as proposed, reveals that objectives are not being met, the monitoring effort would be expanded to include all 15 sites and replace gravel as necessary.

Riparian and Floodplain Improvement Program (SA Article A106), page 3.3-41:

The FERC Staff Alternative would revise SA Article A106 to include a provision to implement 50 percent of the selected measures within 10 years and the remaining measures within 12 years of the issuance of any license for the project. This alternative also directs DWR to include in the assessment of potential actions in this program an evaluation of the potential for flood/pulse flows to increase the risk of Infectious Hematopoietic Necrosis (IHN) transmission. It also directs DWR to delineate specific on-the-ground actions, or provide a quantified benchmark by which success and compliance of the measures can be assessed.

The following text has been inserted into the description of the FERC Staff Alternative provided in the DEIR:

Feather River Fish Hatchery Improvement Program (SA Article A107)

The FERC Staff Alternative would revise SA Article A107 to include a requirement that the Commission review and approve any alternative water temperature objectives developed as part of this program.

Instream Flow and Temperature Improvement for Anadromous Fish (SA Article A108)

The FERC Staff Alternative would revise SA Article A108 to include a requirement that DWR obtain Commission approval prior to implementing any modification to instream flows. Alternative water temperature objectives that are at least as restrictive as DWR's proposal could be developed as part of this program and submitted to the Commission for approval.

Oroville Wildlife Area Management Plan (SA Article A115)

The FERC Staff Alternative would revise SA Article A115 to include Butte County as a consulted party during the development of this plan that sets management objectives for recreational use and managing terrestrial and aquatic resources within the OWA.

Section 3.3.3.4 Recreation Facilities and Operations

Recreation Facilities—Equestrian, Bicycle, and Hiking Trails, page 3.3-41:

The FERC Staff Alternative would revise SA Article A127 to include a provision to establish standards for maintaining developed recreation facilities, including trails; conduct baseline inventory of trail conditions using established standards developed for project trails prior to proposing any changes to trail use designation. Trail conditions would be monitored and reported on through the term of any license issued. The recreation monitoring program would be expanded to include non-trail users to detect latent demand and unmet user needs related to trails. The non-motorized trails program would be revised based on the trail condition inventory, analysis of the survey and trail use data, and results of the feasibility studies for new trails. The Comprehensive Non-Motorized Trails Program would be finalized and include a detailed implementation schedule, after completion of a trail condition inventory, visitor use surveys, collection of trail use data and proposed feasibility investigations. Recommendations, if appropriate, for changing trail use designations and a proposed implementation schedule would be included.

Recreation Facilities—Specific Actions at Lake Oroville, page 3.3-41:

Foreman Creek Area

Under the FERC Staff Alternative, ~~the Foreman Creek boat launch~~ would be closed to recreational use while DWR develops a plan for protecting cultural resources that considers a spectrum of possible actions, including installing recreational facilities to redirect recreational use away from cultural resources (as described in SA Article A129)

and discontinuing recreational use at the site. Within 6 months of license issuance, DWR would prepare a plan, in consultation with local Native American Tribes, for protecting cultural resources at Foreman Creek.

Section 3.3.3.5 Operations for the Protection of Cultural Resources, page 3.3-42:

Under the FERC Staff Alternative, DWR would revise and resubmit the draft HPMP for Commission approval. The revision would provide rationale for proposing to evaluate only 20 percent of the sites, ~~and provide for evaluating all sites within the fluctuation zone, and modify the appended table of archaeological and historic resources.~~

CHAPTER 4.0 EXISTING CONDITIONS

Section 4.7.1.2 Project Setting

Importance of Recreational Opportunities/Facilities to the Public, pages 4.7-2 and 4.7-3:

The project area is a regional draw for recreationists, with Lake Oroville being one of the largest reservoirs in the state, and with the excellent fishing in Lake Oroville and the Feather River during annual salmon and steelhead runs. However, there is also heavy local use of Lake Oroville and other project facilities, including a significant amount of off-season use. The predominantly preponderance of local use (53.5 percent of survey respondents came from within Butte County) is attributable to the close proximity of the city of Oroville and surrounding communities to the southern end of Lake Oroville and to the downstream areas. Many recreation areas are within a few minutes drive of these communities, and some residential areas are immediately adjacent to developed recreation facilities. Lake Oroville is also the closest reservoir for residents of other Butte County cities such as Paradise and Chico. Over one-half of those surveyed on-site for the Recreation Surveys (SP-R13) were from Butte County, demonstrating the importance of the project area to local residents. Some of the facilities do not currently have user fees, such as car-top boat ramps, the Lake Oroville Visitors Center, boat launching and day use facilities at Thermalito Afterbay, and all areas of the Diversion Pool and the OWA. Remaining developed areas typically have user fees that conform to those imposed at other State Recreation Areas.

Access to Lake Oroville, page 4.7-3:

Three major highways—State Routes (SR) 70, 99, and 162—provide regional road access to the Lake Oroville vicinity. Two major interstate highways—Interstate 5 (I-5) and I-80—connect to these State highways. SR 70 is a two- to four-lane highway that runs north/south between Sacramento and the city of Oroville and turns northeast/southwest a few miles north of Oroville. SR 70 crosses the West Branch arm of Lake Oroville before continuing north to Quincy. SR 99 is a two- to four-lane highway that runs primarily north/south and roughly parallel to SR 70 and I-5, providing an additional route between the Sacramento area and Red Bluff. SR 99 northbound

connects Chico to Red Bluff and southbound connects Chico to Sacramento. SR 162 is a two-lane highway that runs east/west between I-5 and the city of Oroville. The road continues east through the city of Oroville before crossing the reservoir at the mouth of the Middle Fork arm. The city of Oroville is 42 miles from I-5. Generally, the major recreation areas are easily accessible from these highways; however, the rugged terrain and limited public road network makes accessing remote forks of Lake Oroville more difficult.

Section 4.7.2.2 Facilities and Opportunities in the Project Area

Boating, page 4.7-7:

Boating facilities at Lake Oroville include two full-service marinas and five boat ramps. The two concessionaire-operated marinas are located at Lime Saddle and Bidwell Canyon; the respective concession contracts for these facilities are administered by DPR. They offer long- and short-term moorage and covered and open dock slips as well as boat rentals, gas, pump-out stations, and small stores with bait and tackle and convenience goods. There is also a restaurant/bar at the Bidwell Canyon Marina. The major launch ramps are located at Bidwell Canyon, Spillway, Lime Saddle, and Loafer Creek. The Bidwell Canyon ramp is a multi-lane boat ramp with parking for more than 200 vehicles and boat trailers. The Spillway area contains the largest boat launching facility on the reservoir, with ramps and parking areas at two levels to accommodate seasonal water level changes. The upper level ramp has 12 lanes with 3 floating docks and a parking area, providing space for 350 vehicles with boat trailers and more than 100 single vehicles. The lower level ramp provides 8 launch lanes and 3 floating docks, along with additional parking close to the ramp. The Lime Saddle ramp is a multi-lane boat ramp with parking for several hundred vehicles and boat trailers. The Loafer Creek ramp is a seasonal, multi-lane boat ramp with a floating dock and parking for nearly 200 vehicles and trailers. Each of the major ramps provides restrooms, and all but Loafer Creek provide fish cleaning stations for anglers.

The following text has been inserted into the description of the environmental setting provided in the DEIR for Boating:

Fish consumption advisories released by the California Environmental Protection Agency through its OEHHA are relatively common in the Sierra Nevada foothills, the Delta, and the Coastal Ranges of California, where historic mercury ore mining and processing or gold mining activities occurred. Such activities once were common upstream of and in the vicinity of the Oroville Facilities. There is a new Draft OEHHA consumption advisory for mercury in fish from the lower Feather River in Butte, Yuba, and Sutter Counties (OEHHA 2006). However, OEHHA indicates that there have been no recorded incidences of mercury-related health effects from consumption of sport fish from California waters. The potential for health effects at the fish tissue mercury levels typically found in California is minimal unless a person is eating considerably greater quantities of fish than recommended (OEHHA 2003).

Trails and Trailheads, pages 4.7-9 and 4.7-10:

There are several trails near Lake Oroville, primarily in the Bidwell Canyon and Loafer Creek areas, and a trail along the southwest shoreline of the reservoir with the trailhead at the Spillway BR/DUA. Two trails in the Loafer Creek area, the Roy Rogers Trail (4.0 miles) and Loafer Creek Loop Trail (3.2 miles), are currently limited to equestrian and hiking use only. Hikers and bike riders may use the Loafer Creek Day Use/Campground Trail (1.7 miles) and the service road linking the equestrian camp to Saddle Dam and the Bidwell Canyon area. The Bidwell Canyon area includes the Bidwell Canyon Trail (4.9 miles) currently for bike riders and hikers, and the roughly-parallel Dan Beebe Trail (14 miles) currently for equestrians and hikers. The Potters Ravine Trail (8.2 miles) starting at the Spillway BR parking lot is available to all non-motorized user types. The Wyk Island Trail (0.2 mile) is associated with the Bidwell Canyon DUA and is for pedestrians only. The 0.2-mile Chaparral Trail is an interpretive trail next to the Lake Oroville Visitors Center.

The Saddle Dam Trailhead at the south end of Lake Oroville is ~~primarily~~ often used by equestrians. It provides access to the Dan Beebe Trail in the Bidwell Canyon area and, by crossing the Saddle Dam, to the Loafer Creek Loop Trail and Roy Rogers Trail in the Loafer Creek area. Recent improvements at the site include regrading and adding gravel to the parking area, installation of picnic tables, installation of a vault toilet, a water trough, and hitching posts for horses, and planting native shade trees. This trailhead also allows hikers and bicyclists access to the Bidwell Canyon Trail.

Trails and Trailheads, page 4.7-11:

The 14-mile Dan Beebe Trail is currently designated an equestrian trail (hikers are also permitted), winding through the hillsides above the south side of the Diversion Pool, that links to Kelly Ridge and continues to the Saddle Dam trailhead. The Lakeland Boulevard Trailhead sits above Thermalito Diversion Dam on the southeast side of the lower Diversion Pool and provides access to both trails. The large parking area serves as a day-use equestrian staging area with portable toilets and picnic tables. The Powerhouse Road Trailhead is near the upstream end of the Diversion Pool and provides access to the Brad Freeman Trail, but has no facilities.

Section 4.7.5.3 Project Area Visitor and Visit Characteristics, page 4.7-21:

The following summary serves to describe in general terms the visitors to the project area and their use of the area for recreation based on survey results.

Most project area visitors are regular visitors to the area (three or more visits per year) and most visit during the spring and fall as well as summer. Over 60 percent of visitors surveyed were from Butte County or an adjacent county, and nearly all of the remaining visitors were from elsewhere in northern California. On the east side of Lake Oroville, relatively undeveloped and "free" access points (such as Foreman Creek and Enterprise), are dominated by "local" visitors to an even greater degree.

Section 4.9.2.1 Law Enforcement and Criminal Justice Services, page 4.9-4:

~~Several agencies provide law enforcement services in the Project area. DPR, the California Highway Patrol (CHP), DFG, and the Butte County Sheriff's Office all share law enforcement responsibilities within the Project area, with DPR's efforts focused primarily is the primary provider of law enforcement services in the project area, focusing its services within the LOSRA. DPR is the primary agency responsible for managing and patrolling recreation sites in the LOSRA, which includes Lake Oroville and Thermalito Forebay. The Butte County Sheriff's Department and the City of Oroville Police Department also provide primary backup-law enforcement services within the project area, at times serving as the first responders to calls for law enforcement services, depending upon the location, type of call, and availability of other potential responders. Together with the CHP, the The Butte County Sheriff's Department is the primary provider of law enforcement services in the unincorporated areas of Butte County outside of the LOSRA, including the Thermalito Afterbay (via contract with DWR) and the OWA. The Oroville Police Department has primary law enforcement responsibilities within the city of Oroville, including areas along the Feather River within the city limits.~~

Section 4.9.2.1 Law Enforcement and Criminal Justice Services, page 4.9-5:

When arrests are made in the project area, regardless of the arresting agency, arrestees are processed through the Butte County criminal justice system, potentially involving Butte County's jail and court system, including Butte County's district attorney's office, its public defender office, and its probation department. (Note: The Butte County Superior Court is funded entirely by the State of California; ~~therefore, cases that are processed through the superior court do not directly affect the County's budget, although Butte County incurs costs for cases processed through the Superior Court.~~) According to DPR staff (pers. comm., Feazel 2006), DPR arrested about 80 persons in the LOSRA requiring incarceration during fiscal year 2004-05. During that year, DPR rangers also issued more than 500 citations, with a significant portion of fines from these citations going to Butte County to help defray criminal justice and law enforcement costs associated with these actions.

Section 4.9.2.1 Law Enforcement and Criminal Justice Services, page 4.9-6:

An additional State contribution to law enforcement presence at the Oroville Facilities is provided by CHP pursuant to their lead enforcement role for State lands. ~~State Funding for law enforcement in the project area is a public service benefit to Butte County because~~ Note: FERC typically does not require project licensees to provide dedicated law enforcement at project facilities.

Section 4.9.2.2 Fire Protection and Emergency Services, page 4.9-12:

In practice, fire protection and emergency medical services to the project area and to the Greater Oroville Area are provided jointly by CDF, BCFD, DPR, and the Oroville Fire-Rescue Department. These agencies cooperatively respond to calls within the

area, ~~based on the South County Interagency Fire Protection Agreement. Under this agreement, with~~ primary responsibility for fire protection and emergency service calls in the south County area ~~is divided among these agencies depending on the location of the incident and the availability of fire units to respond to the call, regardless of primary jurisdictional responsibilities.~~

Section 4.9.2.2 Fire Protection and Emergency Services, pages 4.9-12 and 4.9-13:

CDF provides funding for the Butte Emergency Command Center, which serves the needs of CDF, BCFD, and certain cities within the county. Additional funding for staffing and operations of the center is provided by Butte County and cities, subject to a contractual agreement.

Section 4.9.2.2 Fire Protection and Emergency Services, pages 4.9-13 and 4.9-14:

As discussed previously, BCFD holds responsibility for responding to wildland fire incidents in the unincorporated areas of the County outside of State Responsibility Areas, and has primary financial responsibility for responding to structural fires and medical emergency calls in all unincorporated areas of Butte County, although DPR has primary responsibility for responding to emergency services calls in the LOSRA. As described previously, Butte County contracts with CDF for full-service emergency and non-emergency response to incidents that include medical emergencies, rescues, structural fires, wildland fires, hazardous material spills, and other miscellaneous calls for service. Butte County pays CDF for staff services under the cooperative fire protection agreement, and BCFD ~~receives independently provides~~ supplemental staffing through a volunteer program. In addition to the direct costs that Butte County pays CDF for the personnel assigned to BCFD, the County pays an administrative rate that has ranged from 9 percent to over 12 percent during the past 10 years for administrative overhead. Furthermore, Butte County is solely financially responsible for all BCFD stations, equipment, and other resources.

Section 4.9.2.2 Fire Protection and Emergency Services, page 4.9-14:

According to Butte County (Butte County Office of the Chief Administrative Officer 2006), there are 22 fire stations, not including City of Oroville fire stations, ~~with the ability to respond and provide services to a large part of Butte County that includes the project area that either respond to calls in the project area or that must move up and cover priority areas when a station near the project area is left uncovered for 30 minutes or more. The move-up-and-cover stations thus must respond when the needs arise in the project area but do not actually provide services within the project area.~~ Butte County has stated that these fire stations have response areas that fall within the area most frequented by resident and non-resident visitors to the Oroville Facilities. This roughly 400,000-acre area, as defined by Butte County in its relicensing filings with FERC, was used by Butte County to calculate county project-related emergency response calls. This represents an area approximately ten times larger than the project area. Of these 22 stations, 9 are Butte County Volunteer Fire stations, 4 are CDF/BCFD 'Amador' stations, 8 are BCFD stations, and 1 is a CDF station.

Section 4.9.2.4 Utilities and Service Systems, page 4.9-17:

Solid Waste

Management of solid waste material in the area is performed by several privately owned transfer stations and one central sanitary landfill site that is owned, operated, and managed by Butte County, ~~and leased to a private company (Waste Management) for operation and management.~~ Solid waste produced in the area is transferred to the Neal Road Landfill, which is located in Butte County near the City of Paradise, ~~and operated by the Neal Road Landfill Company, a subsidiary of Waste Management.~~ The Neal Road Landfill provides service to all 212,800 residents of Butte County. Waste from outside Butte County is not accepted. The landfill's expected capacity would allow it to be used until 2034, with a total of 140 acres permitted for landfill.

Section 4.13.1 Current Agricultural-Related Water Diversions, page 4.13-4:

~~Figure 4.2-12~~ Figure 4.2-11 in Section 4.2.2, Surface Water Quality, illustrates the water temperatures at the diversion locations during the early growing season, the pattern of water diversion volumes, and the relationship of diversion volume to the resulting water temperatures. ~~Water temperatures for rice production are reported to be suitable above 60 degrees Fahrenheit (°F) to 65°F (Mutters et al. 2003a).~~ Graphical representation of water temperatures shown in Section 4.2.2 indicates that the Western Canal diversion location remains below 65°F for the majority of the early growing season. Because of the relatively short residence time of water in the agricultural conveyance systems, especially during periods of high volumes of diversions and agricultural water deliveries, there is little opportunity for water to warm before it is delivered in the field at the point of use. After water is delivered to a rice field, it warms to ~~an~~ equilibrium with the ambient air temperature. Areas in the rice fields that are affected by delivery water temperatures are localized to the areas of the field ~~immediately~~ adjacent to the field water inlet. Later in the rice growing season, when ambient air temperatures are warmer and delivery volumes are lower, there is some warming of water within the conveyance systems, especially in the farthest reaches of the system at greater distances from the diversion location to the point of the water application.

Section 4.13.4 Cultural Practices and Rice Production, page 4.13-13:

Rice production requires relatively warm ~~warmer~~ water during the spring and summer for germination and growth of rice (i.e., 65°F from planting through panicle initiation (approximately ~~April-May~~ through mid-May-July), and 59°F during the remainder of the growing season) ~~(DWR 2004)~~. Research indicates that a 100 percent yield loss can occur in locations exposed to water temperatures below 55°F in as little as 4 days (100 hours) of exposure, and about a 60 percent yield loss can occur in locations exposed to water temperatures below 60°F in as little as 8 days (200 hours) of exposure (Mutters et al. 2003a).

Section 4.14.1 Regional Setting, page 4.14-1:

The project area is located in Butte County approximately 3 hours by car from the San Francisco Bay Area and 1.5 hours from the City of Sacramento. The county encompasses approximately 1,665 square miles in north central California. The western part of the county is located in the northern Sacramento Valley, while the eastern portion extends into the foothills of the Cascade Mountain Range and the Sierra Nevada.

Section 4.14.3.1 State Highways, page 4.14-10:

Caltrans plans to improve State Routes with regular congestion as budget allocations allow (pers. comm., Van Valen 2003). The plan within the Transportation Concept Report for SR 70 (Caltrans 2000) is to make this route part of the basic trunk system of higher standard highways of statewide significance serving interregional trips (BCAG 2004, page 3-9). The *Interregional Transportation Strategic Plan* identifies the portion of SR 70 between its junction with SR 99 in Sutter County and SR 149 in Butte County (segments 1-7) as a “High-Emphasis Focus Route,” which means it is one of Caltrans’ highest priority routes for project planning and programming. The intent is to improve this portion of SR 70 to full freeway standard (Caltrans 2003).

Highway improvements are planned through the Regional Transportation Plan (RTP), and are funded for development and implementation through the State Transportation Improvement Plan (STIP). As noted in the most recent RTP for Butte County (BCAG 2004, page 3-9), “The SR 70 Corridor in Butte County south of Oroville continues to be the top priority for STIP funding for BCAG.” The first phase of improvement of a section of SR 70 near Oroville, known as the SR 70 at Ophir Road Project, to freeway standard has been fully funded in the STIP. This project was phased due to limited statewide funding in the STIP. Financial constraints have also affected planning of the SR 70 Marysville Bypass south of Oroville. This project is no longer being carried forward by Caltrans (BCAG 2004, page 3-9). The 2004 RTP continues to affirm “the SR 70 Corridor as the region’s top priority after the SR 149 project,” while acknowledging that “a realistic approach to addressing safety and growth for the corridor would be to complete incremental improvements such as passing lanes on the existing corridor” (BCAG 2004, page 3-10).

Section 4.14.3.2 Butte County Roads, pages 4.14-10 and 4.14-11:

In response to comments from Butte County, the following text provided on page 4.14-10 of the DEIR has been revised; Figure 4.14-5, “County-Maintained Access Roads Serving Project Area,” provided in the DEIR has been revised; and Table 4.14-3 has been updated, as shown on the following pages. The revised Figure 4.14-5 is presented on page 2-23.

The network of roads in the project vicinity serve a variety of local and regional transportation needs, including connectivity between local residential uses and city and county services. Butte County roads are also used by visitors (i.e., non-residents of

unincorporated Butte County) to access the Oroville Facilities. Although several of the roads heavily used by recreationists to reach popular recreation sites in the LOSRA are either State-maintained highways (e.g., SR 70, SR 162) or City of Oroville-maintained streets (e.g., Oroville Dam Boulevard, Montgomery Street), a number of County-maintained roads are also regularly or sometimes used to reach the Oroville Facilities. According to the Butte County Public Works Department (pers. comm., Crump 2003; Edell 2003), the roadway access shown in Figure 4.14-5 and summarized in Table 4.14-2 is used by visitors. Information relative to recreational access was provided in SP-R1, Vehicular Access Study (DWR 2003), for these roadway segments. More information related to these roads is provided in Section 4.14.4.1 below.

Table 4.14-3 identifies daily traffic volumes reported by local agencies for these roads. Data collected in 2006 is identified, along with volumes reported by Butte County for the years 2001, 2002, or 2003, or 2004.

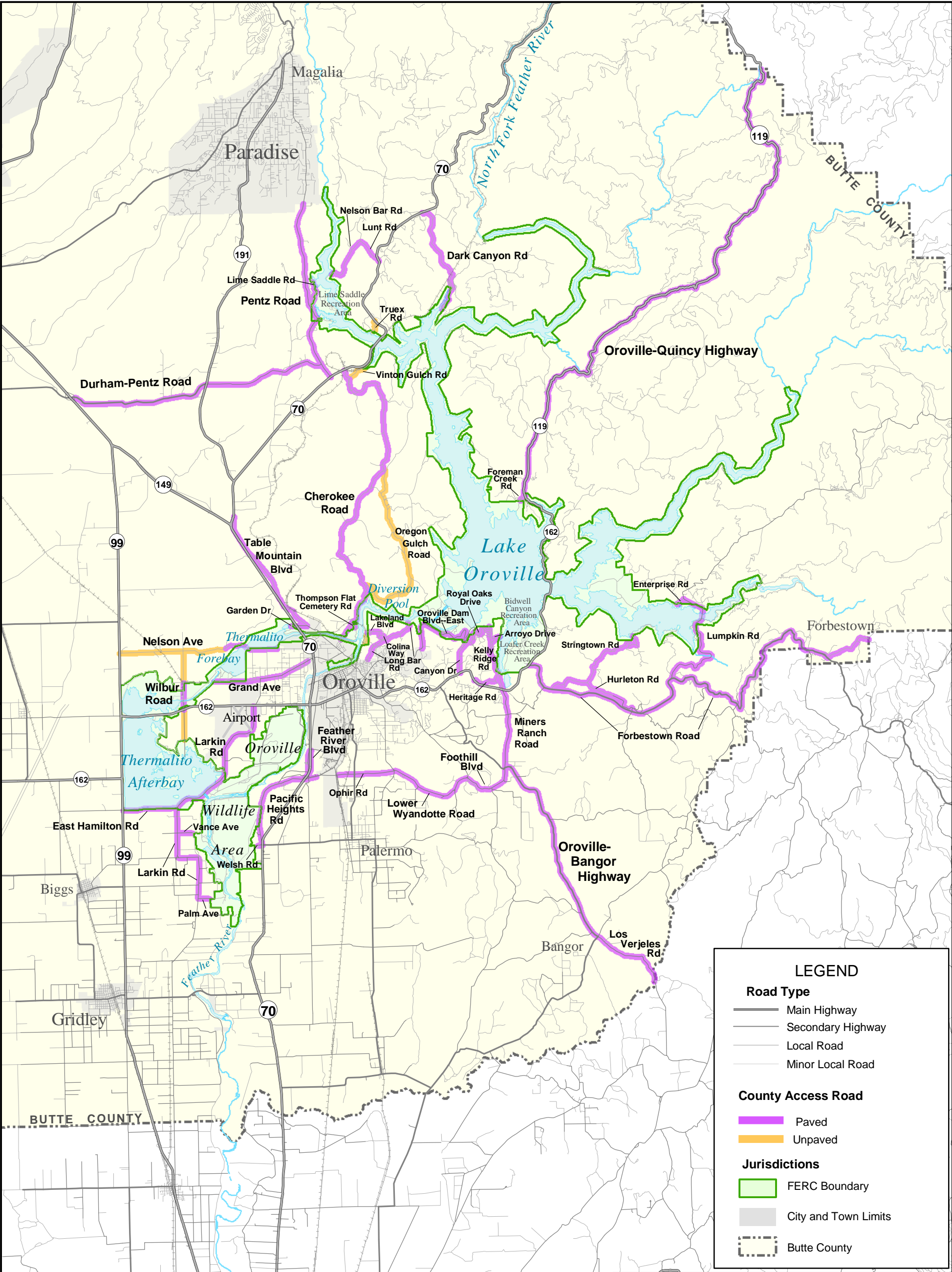
As noted in Table 4.14-3, all study area roads carry traffic volumes that are indicative of LOS C conditions, with the exception of the portion of Durham Pentz Road between SR 99 and SR 191, and the portion of Pentz Road between SR 70 and the intersection with Durham Pentz Road, where traffic volumes have exceeded 5,000 ADT and are therefore characterized as LOS D using the RTP thresholds. These data are not specific to individual intersections, but are adequate for the understanding of traffic flow and patterns in the project area.

Table 4.14-3, page 4.14-13:

Table 4.14-3. Traffic volumes on connecting roads.

Road	From	To	Daily Volume	Level of Service
Arroyo Drive			n.a.	-
Canyon Drive			3,199**	C
Cherokee Road	Oroville City limits	Burma Road <u>State Route 70</u>	528**	C
Colina Way	Long Bar Road	Lakeland Blvd	n.a.	-
Dark Canyon Rd			n.a.	-
Durham Pentz Road			8,289 to 2,255*	C ¹
Feather River Blvd	Outside of City limits		1,870**	C
<u>Fernwood Avenue</u>			<u>n.a.</u>	<u>-</u>
<u>Foothill Boulevard</u>			<u>3,129</u>	<u>C</u>
Forbestown Road	Oroville Quincy Highway	Butte County line	2,978*	C
<u>Foreman Creek Road</u>			<u>n.a.</u>	<u>-</u>

¹ LOS D occurs between SR 99 and SR 191.



Source: TCW Economics 2004 / Butte County Public Works 2004-2007 / EDAW 2005-2008



3 1.5 0 3 6 9 Miles

Scale 1 : 190,080
1" = 3 miles

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

**Oroville Facilities
FERC Project No. 2100**

FINAL ENVIRONMENTAL IMPACT REPORT

FIGURE 4.14-5

**County-Maintained Access Roads
Serving Project Area**



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Table 4.14-3, page 4.14-13 (continued):

Table 4.14-3. Traffic volumes on connecting roads.

Road	From	To	Daily Volume	Level of Service
Garden Drive			1,484**	C
Grand Avenue	West of city limits		601**	C
East Hamilton Road			98**	C
Heritage Road			256*	C
Hurleton Road			426**	C
Kelly Ridge Road			2,187**	C
Lakeland Blvd			n.a.	-
Larkin Road	SR 162	East Hamilton Rd <u>Almond Avenue</u>	2,828 <u>3,373</u> **	C
<u>Lausen Street</u>			<u>n.a.</u>	<u>-</u>
Lime Saddle Road			341**	C
Long Bar Road	City limits	Colina Way	930**	C
Los Verjeles Road	La Porte Road	Butte County line	996*	C
Lower Wyandotte Rd	Ophir Road	Oroville Bangor Highway <u>Foothill Blvd.</u>	7,210*	C
Lumpkin Road	Forbestown Road	North shore of South Fork <u>Enterprise Rd.</u>	649**	C
Miners Ranch Road			2,777*	C
Nelson Avenue	West of city limits		995**	C
<u>Nelson Bar Road</u>			<u>63</u>	<u>C</u>
<u>Oregon Gulch Road</u>			<u>276</u>	<u>C</u>
Ophir Road	Beyond City limits		6,999*	C
Oroville Bangor Highway	Miners Ranch Road	La Porte Road	2,036*	C
Oroville Dam Blvd	East of Glen Drive		1,586**	C
Oroville Quincy Highway	East Fork Canyon Creek	County line	375*	C
Pacific Heights Road			1,101**	C

Table 4.14-3, page 4.14-13 (continued):

Table 4.14-3. Traffic volumes on connecting roads.

Road	From	To	Daily Volume	Level of Service
<u>Palm Avenue</u>			<u>725</u>	<u>C</u>
Pentz Magalia Road	Paradise limits	SR 70	1,653 <u>35,011</u> **	CD ²
Royal Oaks Drive	Canyon Drive	Kelly Ridge Rd	1,211**	C
<u>Stringtown Road</u>			<u>n.a.</u>	<u>-</u>
Table Mountain Blvd	Outside City of Oroville		n.a.	-
Thompson Flat Cemetery Road			n.a.	-
Truet Truex Road			n.a.	-
<u>Vance Avenue</u>			<u>n.a.</u>	<u>-</u>
Vinton Gulch Road			n.a.	-
Wilbur Road			n.a.	-

Sources: *BCAG 2006, **Butte County ~~2001, 2002, 2003, 2004~~ 2006
LOS thresholds per 2004 Butte County Regional Transportation Plan (BCAG 2004).

Section 4.14.4.1 Roads Maintained by Butte County, pages 4.14-14 and 4.14-15:

According to the Butte County Public Works Department (pers. comm., Crump 2003; Edell 2003) and roadway access information provided by SP-R1, Vehicular Access (DWR 2003), the following roadway segments shown in Figure 4.14-5, are used by visitors:

- Kelly Ridge Road
- Oroville Dam Boulevard East between Glen Drive and Powerhouse Road;
- Canyon Drive between Olive Highway and Oroville Dam Boulevard East;
- Royal Oaks Drive between Canyon Drive and Kelly Ridge Road;
- Oroville Quincy Highway between ~~East Fork Canyon Creek~~ Foreman Creek Road and the Butte County line;
- Forbestown Road between Oroville Quincy Highway and the Butte County line;
- Lumpkin Road from Forbestown Road to ~~the north shore of the South Fork arm of Lake Oroville~~ Enterprise Road;

² LOS D occurs between SR 70 and the intersection with Durham-Pentz Road.

- Enterprise Road from Lumpkin Road to boundary of LOSRA;
- Stringtown Road;
- Foreman Creek Road between Oroville Quincy Highway and boundary of LOSRA;
- Nelson Bar Road;
- Lime Saddle Road between Pentz Road and boundary of LOSRA;
- Foothill Boulevard;
- The portion of Ophir Road outside of the City of Oroville;
- Lower Wyandotte Road between Ophir Road and ~~Oroville Bangor Highway~~ Foothill Boulevard;
- Miners Ranch Road;
- Oroville Bangor Highway between Miners Ranch Road and La Porte Road;
- Los Verjeles Road between La Porte Road and the Butte County line;
- ~~Pentz-Magalia~~ Road south of the Paradise City Limits to SR 70;
- Durham Pentz Road;
- Vinton Gulch Road;
- ~~Truet-Truex~~ Road;
- Dark Canyon Road;
- Cherokee Road between Oroville City limits and ~~Burma Road~~ SR 70;
- Oregon Gulch Road;
- Thompson Flat Cemetery Road;
- Long Bar Road between the Oroville City Limits and ~~Colina Way~~ the end;
- Colina Way between Long Bar Road and ~~Lakeland Boulevard~~ Fernwood Avenue;
- Fernwood Avenue between Colina Way and Lausen Street;
- Lausen Street between Fernwood Avenue and Lakeland Boulevard;

- Lakeland Boulevard;
- Nelson Avenue west of the Oroville City Limits;
- Wilbur Road;
- Grand Avenue west of the Oroville City Limits;
- Larkin Road between SR 162 and ~~East Hamilton Road~~ Almond Avenue (south end of Oroville Wildlife Area);
- Vance Avenue;
- Palm Avenue;
- Welsh Road;
- East Hamilton Road;
- Pacific Heights Road;
- Arroyo Drive;
- Heritage Road;
- Garden Drive;
- The portion of Feather River Boulevard outside of the City of Oroville;
- ~~Hurelton~~ Hurleton Road; and
- The portion of Table Mountain Boulevard outside of the City of Oroville.

Section 4.14.4.2 Bridges and Roads Maintained by DWR or Other State Entity Partnering with DWR, page 4.14-16:

DWR owns and maintains the structural portions of several bridges utilized by the public in Butte County, and maintains the structural portions of those bridges. ~~While Butte County or and~~ Caltrans maintains the non-structural portions of the bridges, including the decking portion (or roadway), joint seals, bridge rails, drainage, curb/sidewalks, and approach rails.

Section 4.14.4.2 Bridges and Roads Maintained by DWR or Other State Entity Partnering with DWR, page 4.14-17:

The following roads are maintained in whole or in part by DWR, DPR, or other State entity partnering with DWR at the Oroville Facilities:

Section 4.15.1 Hazardous Materials, page 4.15-1:

Hazardous materials are defined in Section 66260.10, Title 22, of the California Code of Regulations as:

A substance or combination of substances which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious, irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of or otherwise managed.

Hazardous materials within the FERC Project boundary are managed through the coordination of federal, State, and Butte County laws, regulations, and programs. A thorough search of available environmental databases, EDR Report, has indicated that there are 36 sites within the City of Oroville area. This search ~~indicates~~ indicated where there is some type of hazardous materials information, whether it relates to existing underground storage tanks, aboveground storage tanks, hazardous materials handling, hazardous waste generation, or hazardous materials spill incidents. ~~There appear to be no significant hazardous materials or waste issues within the FERC Project boundary.~~ A search of the California Integrated Waste Management Solid Waste Information System database of landfills indicates that one site, the closed Oroville Burn Dump, exists inside the OWA within what is now the FERC Project boundary. The dump operated from the mid-1950s and was closed in 1970 (CIWMB Website). Analysis of the burn dump material in 2000 indicated that none of the samples exceeded the Federal Resource Conservation and Recovery Act (RCRA) limits published in Title 22 of the CCR and Title 40 of the Code of Federal Regulations. Thus, the material is non-RCRA waste. An existing Memorandum of Understanding (MOU) between the California Integrated Waste Management Board and the California Department of Toxic Substances Control dated March 3, 1995, allows that a closed burn dump containing waste material that meets the California standard for hazardous waste under 22 CCR 66261 and does not meet the definition of a RCRA hazardous waste can be relocated within the footprint of an existing closed landfill and not be managed as a hazardous waste. Following the terms of the MOU, DWR entered into an agreement with Butte County Public Health Department, Butte County Air Quality Management District (BCAQMD), and DFG (as the landowners), to leave the burn dump waste material within the footprint of the original burn dump site and cap the material. This site is monitored quarterly by the Butte County Public Health Department and additional inspections may be conducted by DFG. DWR conducts its hazardous materials and wastes management activities within the requirements of local, State, and federal laws and regulations.

CHAPTER 5.0 ENVIRONMENTAL IMPACTS

Table 5.4-5, “Environmental Effects on Aquatic Resources, pages 5.4-13 and 5.4-14:

Table 5.4-5. Environmental effects on aquatic resources.

Alternative(s)	Article # and Title	Level of CEQA Analysis	Nature of Potential Impact(s)	Effect
PRO, FERC	A102—Gravel Supplementation Program	Programmatic	Increase salmonid spawning habitat quantity and quality/short-term construction related effects.	B/LTS
PRO, FERC	A103—Channel Improvement Program	Programmatic with some project-specific elements	Increase salmonid habitat quantity and quality/short-term construction related effects.	B/LTS
PRO, FERC	A104—Structural Habitat Supplementation and Improvement Program	Programmatic	Increase juvenile salmonid rearing habitat quantity and quality/short-term construction related effects.	B/LTS
PRO, FERC	A105—Fish Weir Program	Programmatic	<u>Monitoring weir and</u> segregation of adult spring- and fall-run Chinook salmon spawning	B
PRO	A106—Riparian and Floodplain Improvement Program	Programmatic	Increase salmonid habitat quality and potential slight increase in quantity/short-term construction related effects.	B/LTS
FERC	A106—Riparian and Floodplain Improvement Program	Programmatic	Increase salmonid habitat quality and potential slight increase in quantity/short-term construction related effects.	B/LTS
PRO, FERC	A107—Feather River Fish Hatchery Water Temperature and Feather River Fish Hatchery Adaptive Management Program	Programmatic	Increase salmonid habitat quality and potential slight increase in quantity	B
PRO, FERC	A108—Minimum Flow and other Measures	Project-specific (108.1); Programmatic (108.2 and 108.3)	Increase salmonid habitat quantity and quality Reduced habitat quality for warmwater species	B LTS
NO, PRO, FERC	A110—Lake Oroville Warm Water Fishery Habitat Improvement Program	Programmatic	Increase habitat quantity and quality of warm water fish habitat in Lake Oroville	B
NO, PRO, FERC	A111—Lake Oroville Cold Water Fishery Habitat Improvement Program	Programmatic	Increase habitat quantity and quality of cold water fish habitat in Lake Oroville	B

Table 5.4-5. Environmental effects on aquatic resources.

Alternative(s)	Article # and Title	Level of CEQA Analysis	Nature of Potential Impact(s)	Effect
PRO	Appendix F—Habitat Expansion Agreement	Programmatic	Fully mitigates for the loss of access to historic anadromous salmonid habitat due to the continued existence of the Oroville Facilities	B

Coding:

B = Action with potential to result in a beneficial effect; could involve short-term, less-than-significant, construction-related impacts that would be avoided or reduced through the use of Best Management Practices (BMPs). See Appendix D.

LTS = Action that would result in less-than-significant impact on resource.

Section 5.4.4.1 Program-Level Impacts and Mitigation Measures, pages 5.4-14 and 5.4-15:

Continuation of Oroville Facilities operations, construction of new or improved facilities, and implementation of the Proposed Project would result in beneficial effects on aquatic resources. These include supplementing and improving gravel salmonid spawning substrate in the lower Feather River, improving existing and creating new side-channel fish habitat, supplementing and improving large woody debris (LWD) in the lower Feather River, installation of fish monitoring and segregation weirs for the segregation of spring-run Chinook salmon spawning, implementation of a Hatchery Adaptive Management Program, implementation of Lake Oroville warm water and cold water fishery habitat improvement programs, and implementation of a habitat expansion program for spring-run Chinook salmon (Proposed Project only). Additionally, under both the Proposed Project and the FERC Staff Alternative, after the potential facility modification(s) are in place and after the testing period is completed, a revised set of water temperature objectives may be developed for SA Article A108, Table 2.

Impact 5.4-c, page 5.4-19:

NO	<p>Spring-run Chinook salmon—<u>Incremental degradation of genetic distinctness or character of the spring-run Chinook salmon from introgression with fall-run Chinook salmon due to shared spawning habitats, temporally overlapping spawning periods, and hatchery effects as well as from in-stream conditions would result from the No-Project Alternative as compared to the Existing Condition.</u> Incremental degradation of spawning substrate and habitat quality from continuing loss of LWD and redd superimposition when compared to Existing Conditions would occur. This impact is considered less-than-significant.</p>
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Impact 5.4-c, pages 5.4-19 and 5.4-20:

PRO	Implementation of the fish <u>monitoring and</u> segregation weirs (SA Article A105) addresses genetic introgression between spring- and fall-run Chinook salmon caused by the continued existence of the Oroville Facilities and the resultant loss in spatial and temporal segregation of the two runs due to the blocking of upstream adult migration. Thus, installation of <u>the two fish segregation</u> weirs and implementation of the Hatchery Adaptive Management Program and the Habitat Expansion Agreement (SA Appendix F) would result in beneficial effects on aquatic resources.
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Impact 5.4-c, page 5.4-21:

PRO	Implementation of the fish <u>monitoring and</u> segregation weirs (SA Article A105) would reduce the competition for currently available spawning habitat. Additionally, initial new license period operational modifications would result in beneficial effects on the habitat quantity and quality for spring-run Chinook salmon through water temperature enhancements in the lower Feather River.
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Section 5.4.4.2 Project-Level Impacts and Mitigation Measures, page 5.4-22:

The FERC FEIS identifies a need to evaluate the potential effects of SA Article A106, Riparian and Floodplain Improvement Program, on Infectious Hematopoietic Necrosis (IHN) in the lower Feather River. IHN is a fish disease that can affect salmonids. An analysis and discussion of the potential effects of this action on IHN in the lower Feather River on fisheries resources will be included in the project-specific environmental analysis, which will be conducted in a subsequent environmental document when additional specificity of the design characteristics of this action have been developed.

Section 5.7.4 Impacts and Mitigation Measures

Impact 5.7-a, page 5.7-22:

PRO	Recreation Management Plan (SA Article A127) There are four <u>five</u> measures that would change allowable uses on trails. Equestrian use would be allowed on Burma Road, adjacent portions of the Brad Freeman Trail, and on the Bidwell Canyon Trail. Bicycle use would be allowed on the Dan Beebe Trail (except for the Sycamore Hill segment) and on the access road south of the Loafer Creek Equestrian Campground. <u>Bicycle use would also be allowed on most of the Loafer Loop Trail (except for the segment near the Equestrian Campground), and on one limited segment of the Roy Rogers Trail.</u> Changing allowable uses on these trails may make them less attractive to some
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	<p>recreationists who prefer the existing allowable uses on these trails. However, additional trail opportunities would be provided by allowing more types of use on these trails, and substantial opportunities for hiking and equestrian-only use would remain on <u>a 4-mile loop predominantly comprising the Roy Rogers Trail (and part of the Loafer Loop Trail), associated with the Equestrian Campground, where the designation would not change. Trails whose use designation would not change.</u> Therefore, changing allowable uses on the five trails would have a less-than-significant impact on recreation.</p>
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Section 5.12, Air Quality, pages 5.12-1 through 5.12-28:

The following section replaces in its entirety Section 5.12, Air Quality, of the DEIR. For ease of reading, it is included without strikethrough and underlining.

5.12 AIR QUALITY

5.12.1 Regulatory Setting

5.12.1.1 Federal Plans, Policies, Regulations, and Laws

At the federal level, the U.S. Environmental Protection Agency (USEPA) has been charged with implementing national air quality programs. USEPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments made by Congress were in 1990.

The CAA required USEPA to establish national ambient air quality standards (NAAQS). As shown in Table 4.12-1 in Section 4.12, USEPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), respirable particulate matter (PM₁₀), fine particulate matter (PM_{2.5}), and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. If USEPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that could impose additional control measures.

Federal Hazardous Air Pollutant Programs

USEPA has programs for identifying and regulating Toxic Air Contaminants (TACs), or in federal parlance hazardous air pollutants (HAPs). The emissions standards are promulgated in two phases. HAP statutes and regulations generally require the use of the maximum or best available control technology for toxics (MACT and BACT) to limit emissions. In the first phase (1992–2000), USEPA developed technology-based emission standards designed to produce the maximum emission reduction achievable.

In the second phase (2001–2008), USEPA is required to promulgate health risk–based emissions standards where deemed necessary to address risks remaining after implementation of the technology-based standards.

The CAA also required USEPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

5.12.1.2 State Plans, Policies, Regulations, and Laws

The California Air Resources Board (ARB) is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA) (1988). The CCAA, which was adopted in 1988, required ARB to establish California ambient air quality standards (Table 4.12-1). In most cases the California standards are more stringent than national standards. The California standards incorporate a margin of safety to protect sensitive individuals. The CCAA specifies that local air districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

Other ARB responsibilities include, but are not limited to, overseeing local air district compliance with California and federal laws, approving local air quality plans, submitting SIPs to USEPA, monitoring air quality, determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

State Toxic Air Contaminant Programs

In California, TACs are primarily regulated through the Tanner Air Toxics Act and the Air Toxics Hot Spots Information and Assessment Act of 1987. Through these laws, ARB can designate substances as TACs. To date, ARB has identified over 21 TACs, and adopted USEPA's list of HAPs as TACs. Once a TAC is identified, ARB then adopts an Airborne Toxics Control Measure for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions. Most recently, diesel particulate matter (PM) was added to the ARB list of TACs.

ARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). Future control measures include the low-sulfur diesel fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide.

ARB recently published the *Air Quality and Land Use Handbook: A Community Health Perspective*, which provides guidance concerning land use compatibility with TAC sources (ARB 2005). While not a law or adopted policy, the handbook offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities to help keep children and other sensitive populations out of harm's way.

State regulations on asbestos are related to demolition and renovations, and waste disposal of asbestos-containing materials. California also has a statewide regulation covering naturally occurring asbestos (NOA). The Asbestos ATCM for Asbestos-Containing Serpentine, adopted in 1990, prohibited the use of serpentine aggregate for surfacing if the asbestos content was 5 percent or more, which was lowered to 0.25 percent in 2000 and modified to include ultramafic rock.

In July 2001, ARB adopted an ATCM for construction, grading, quarrying, and surface mining operations that regulates grading and excavation activities in areas of serpentine or ultramafic rocks. In addition, the Governor's Office of Planning and Research issued a memorandum providing guidance to lead agencies in analyzing the impacts of NOA through the CEQA review process.

Executive Order S-3-05

On June 1, 2005, Governor Arnold Schwarzenegger issued Executive Order S-3-05 establishing greenhouse gas (GHG) emission targets for California and requiring biennial reports on potential climate change effects on several areas, including water resources. A Climate Action Team (CAT) was established by the governor to lead the reporting efforts. The order established the following goals for reducing GHG emissions in the state:

- By 2010, reduce emissions to the 2000 level.
- By 2020, reduce emissions to the 1990 level.
- By 2050, reduce emissions to 80 percent below 1990 emissions.

The Executive Order identifies the agencies involved and coordination expected:

The Secretary of the California Environmental Protection Agency shall coordinate oversight of the efforts to meet the targets with: the Secretary of the Business, Transportation and Housing Agency, Secretary of the Department of Food and Agriculture, Secretary of the Resources Agency, Chairperson of the Air Resources Board, Chairperson of the Energy Commission, and the President of the Public Utilities Commission.

Due to the low GHG emissions from California reservoirs relative to replacement power sources, it is anticipated that under future implementation of the Renewable Portfolio Standards, hydroelectric generation will play a role in meeting these statewide reduction

targets by replacing power produced by higher GHG-emitting thermal power sources. (*Renewables Portfolio Standard (RPS) Eligibility Guidebook*, publication #CEC-300-2006-007-F, adopted April 26, 2006 [CEC Website].)

Assembly Bill 32

In 2006, the California Legislature passed Assembly Bill 32 (also known as the Global Warming Solutions Act of 2006), which establishes a State goal of reducing GHG emissions to 1990 levels by 2020. The bill requires ARB to adopt regulations and develop an enforcement mechanism to ensure compliance. ARB is currently developing policy for GHG reductions in the state.

5.12.1.3 Local Plans, Policies, Regulations, and Laws

Butte County Air Quality Management District

Butte County Air Quality Management District (BCAQMD) is the primary local agency responsible for protecting the people and the environment of Butte County from the effects of air pollution. BCAQMD is responsible for adopting rules that limit pollution, issuing permits to ensure compliance, and inspecting pollution sources. BCAQMD also monitors air quality in the county and prepares plans to demonstrate how compliance with state and federal standards would be attained and maintained.

BCAQMD has published *Indirect Source Review Guidelines* (BCAQMD 1997). This document establishes Action level thresholds “... to determine the extent of the indirect source impacts resulting from projects and as a basis from which to apply mitigation measures.” The specific thresholds of the BCAQMD are described in Section 5.12.3.1 below.

Air Quality Plans

Federal and State air quality laws also require regions designated as nonattainment to prepare plans that demonstrate how the region will attain the pollutant standard. Air quality planning in the Northern Sacramento Valley Air Basin has been undertaken on a joint basis by the air districts in seven counties, including Butte County. The current plan, the *2003 Air Quality Attainment Plan* (2003 AQAP), is an update of plans prepared in 1994, 1997, and 2000. The purpose of the plan is to achieve and maintain healthful air quality throughout the air basin. The 2003 AQAP addresses the progress made in implementing the 2000 plan and proposes modifications to the strategies necessary to attain the California ambient air quality standard for the 1-hour ozone standard at the earliest practicable date. BCAQMD has current air quality plans for ozone and PM₁₀.

Butte County

There is no air quality element in the existing *Butte County General Plan*. Butte County (County) is in the process of updating its general plan and has produced technical background reports, including one for air quality. This implies that there could be an air quality element when the updated general plan is adopted by the County.

BCAQMD has published *Indirect Source Review Guidelines* (BCAQMD 1997). This document establishes Action level thresholds “... to determine the extent of the indirect source impacts resulting from projects and as a basis from which to apply mitigation measures.” The specific thresholds of the BCAQMD are described in Section 5.12.3.1 below.

Impact Thresholds

The following thresholds are used to determine whether the alternatives would have a significant effect on air quality. There would be a significant impact if the alternatives would:

- 5.12-a: Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- 5.12-b: Conflict with or obstruct implementation of an applicable air quality plan;
- 5.12-c: Expose sensitive receptors to substantial pollutant concentrations;
- 5.12-d: Create objectionable odors affecting a substantial number of people; or
- 5.12-e: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region of influence is nonattainment under an applicable federal or State ambient air quality standard.

There are currently no regulatory standards for GHG emissions or other scientific data to help define what could constitute a significant impact.

5.12.3 Method of Analysis

5.12.3.1 Quantitative Thresholds

In accordance with the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district, where available, may be relied upon to make significance determinations. The District Governing Board of the BCAQMD adopted the Indirect Source Review Guidelines, in 1997. These guidelines address “action level thresholds,” as shown in Table 5.12-1. These thresholds are not specifically characterized as significance criteria under CEQA and are not used in that specific context here. However, these guidelines have been used to assess the extent of measures that could be implemented for a project to reduce the emission of nonattainment pollutants below the BCAQMD standards.

The guidelines of the BCAQMD indicate all projects that emit nonattainment pollutants, no matter how small the project, should implement standard mitigation measures (SMM) as a minimum. Projects with anticipated emissions greater than Level A are guided to include more than the SMM; the additional measures are identified by the BCAQMD as best available mitigation measures (BAMM). Many of these measures are considered best management practices (BMPs) for this project, as noted in Appendix D. In

consideration of these guidelines, emissions calculations and measures to address the BCAQMD thresholds are noted below.

**Table 5.12-1. Butte County Air Quality Management District
action level thresholds.**

NO _x	ROG	PM ₁₀
Level A		
25 pounds/day or less	25 pounds/day or less	80 pounds/day or less
Level B		
Greater than 25 pounds/day	Greater than 25 pounds/day	Greater than 80 pounds/day
Level C		
Greater than 137 pounds/day	Greater than 137 pounds/day	Greater than 137 pounds/day
Level A: Indirect sources that have the potential to emit less than the Level A threshold values would be subject to the recommended list of standard mitigation measures Level B: Indirect sources that have the potential to emit at Level B would select as many supplemental mitigation measures as are feasible, in addition to the recommended list of standard mitigation measures Level C: Indirect sources that have the potential to emit at Level C would select as many supplemental mitigation measures as are feasible, in addition to the recommended list of standard mitigation measures. Depending on factors specific to the project, an environmental impact report may also be necessary under the California Environmental Quality Act (CEQA). Source: BCAQMD 1997		

For purposes of this analysis, quantitative thresholds are:

- ROG and oxides of nitrogen (NO_x)—137 pounds per day;
- PM₁₀—80 pounds per day;
- PM_{2.5}—55 pounds per day; and
- CO—550 pounds per day.

The thresholds for ROG, NO_x, and PM₁₀ are taken from the BCAQMD *Indirect Source Review Guidelines* (BCAQMD 1997). The threshold for PM_{2.5} is taken from the CEQA significance thresholds adopted by the South Coast Air Quality Management District (SCAQMD) (SCAQMD 2006). SCAQMD is one of the few air districts to have established quantitative PM_{2.5} thresholds. The threshold for CO is also taken from SCAQMD.

5.12.3.2 Program-Level Analysis

Program-level actions indicate that all of the actions except one would require the use of construction equipment. Based on the review of both the program-level and project-level descriptions, an “example” project was developed. This example would be a project that includes grading with 3 pieces of heavy equipment working concurrently, followed by construction with 3 pieces of heavy equipment; the construction would include painting and asphalt paving. The emissions of this “example” were quantified using the URBEMIS 2007 software package, version 9.2.2 (Rimpo and Associates 2007). URBEMIS is a calculation tool designed to estimate air emissions from land use

development and the model contains data that are specific for many California air basins and counties. Although programs might occur over 10 years or more, emission factors for 2008 were used, which is a conservative assumption because emission factors would decrease in later years with the continuing improvement in emission reduction technology for diesel engines.

Post-construction emissions at the program level were not quantified because a review of the programs indicated that the post-construction activities would be minimal. Potential mitigation measures were developed to be consistent with the *Indirect Source Review Guidelines* of the BCAQMD and accepted emission control methods.

The GHG emissions from the Oroville Facilities when compared to Existing Conditions are expected to either remain unchanged or decrease with age of the reservoir under any of the alternatives. No actions in any of the alternatives analyzed would result in a significant increase in GHG emissions from the Oroville Facilities and therefore, there are **no impacts**.

5.12.3.3 Project-Level Analysis

Although actions are more specifically described at the project level, the detail is not specific enough to assess individual projects quantitatively. For construction impacts, the “example” project analysis developed for the program-level analysis was also used at the project level. Post-construction emissions associated with some of the actions would be negligible.

5.12.4 Impacts and Mitigation Measures

The following section describes the effects of the No-Project, Proposed Project, and the FERC Staff Alternative. Impacts on air quality from implementing the FERC Staff Alternative are similar to those anticipated from implementation of the Proposed Project. Potential impacts are identified as follows: NO (No-Project), PRO (Proposed Project), and FERC (FERC Staff Alternative). Table 5.12-1 indicates the SA articles or actions that could have an effect on air quality and whether these effects are expected to be beneficial, less-than-significant, or would be less-than-significant following implementation of recommended mitigation measures. All alternatives analyzed result in **less-than-significant** impacts on air quality with the implementation of best management practices (BMPs) included in both the Proposed Project and the FERC Staff Alternative and as described in Appendix D, and mitigation measures described below to address short-term, construction-related impacts.

5.12.4.1 Program-Level Impacts and Mitigation Measures

Continuation of operations, maintenance, and recreation activities, construction of new or improved facilities, implementation of new programs involving ground disturbance, and the use of construction equipment and operations of additional vehicles and watercraft would result in the emission of air pollutants. The proposed programs that may result in the emission of air pollutants are listed in Table 5.12-2.

Table 5.12-2. Environmental effects on air quality.

Alternative(s)	Article # and Title	Level of CEQA Analysis	Nature of Potential Impact(s)	Effects
PRO	A102—Gravel Supplementation and Improvement Program	Programmatic with some Project elements	Short-term pollutant emissions from vehicles and equipment hauling and placing gravel	LTSM
FERC	A102—Gravel Supplementation and Improvement Program	Programmatic with some Project elements	Short-term pollutant emissions from vehicles and equipment hauling and placing gravel	LTSM
PRO, FERC	A103—Channel Improvement Program (This action is programmatic; however, Moe's and Hatchery Ditch activities are project-level)	Programmatic with some Project elements	Short-term pollutant emissions from vehicles and equipment during grading and excavation Long-term pollutant emissions from vehicles used to support monitoring program	LTSM LTS
PRO, FERC	A104—Structural Habitat Supplementation and Improvement Program (SHSI)	Programmatic	Short-term pollutant emissions from vehicles and equipment hauling and placing woody debris, boulders, and other native objects	LTSM
PRO	A106—Riparian and Floodplain Improvement Program	Programmatic	Short-term pollutant emissions from vehicles and equipment during construction	LTSM
FERC	A106—Riparian and Floodplain Improvement Program (as revised by FERC staff to accelerate schedule)	Programmatic	Short-term pollutant emissions from vehicles and equipment during construction	LTSM

Table 5.12-2. Environmental effects on air quality.

Alternative(s)	Article # and Title	Level of CEQA Analysis	Nature of Potential Impact(s)	Effects
PRO, FERC	A110—Lake Oroville Warm Water Fishery Habitat Improvement Program	Programmatic	<p>Short-term pollutant emissions from vehicles and equipment hauling and placing brush shelters, rubble, boulders, and objects and constructing supporting shore facilities</p> <p>Long-term pollutant emissions from vehicles and watercraft used to support monitoring program</p>	<p>LTSM</p> <p>LTS</p>
PRO, FERC	A108, A107—Minimum Flow and Other Measures	Programmatic	<p>Short-term construction pollutant emissions from vehicles and equipment during grading and excavation, construction of new structures associated with the six alternative projects</p> <p>Short-term construction pollutant emissions from vehicles and equipment required to refurbish or replace river valve</p>	LTS
PRO, FERC	A105—Fish Weir Program	Programmatic	Short-term pollutant emissions from vehicles and equipment hauling and placing weirs	LTSM

Table 5.12-2. Environmental effects on air quality.

Alternative(s)	Article # and Title	Level of CEQA Analysis	Nature of Potential Impact(s)	Effects
PRO, FERC	A111—Lake Oroville Cold Water Fishery Improvement Program	Programmatic	Short-term pollutant emissions from vehicles and equipment used to transport and place stock	LTS
			Long-term pollutant emissions from vehicles and watercraft used to support monitoring program	LTS
PRO, FERC	A112—Comprehensive Water Quality Monitoring Program	Programmatic	Long-term pollutant emissions from vehicles and watercraft used to support monitoring program	LTS
PRO, FERC	A122—Construction and Recharge of Brood Ponds	Project	Short-term pollutant emissions from vehicles and equipment during grading and construction of berms	LTSM
PRO	A127—Recreation Management Plan ADA compliance at existing facilities Trails Roads Parking Campgrounds Docks and Boat Ramps Other Facilities	Project	Short-term pollutant emissions from vehicles and equipment during grading and excavation, construction of new facilities	LTSM
			Long-term pollutant emissions from vehicles and watercraft from use of recreation facilities	LTS
FERC	A127—Modified Recreation Management Plan Same as A127 with: Reconstruct boat-in campgrounds	Project	Short-term pollutant emissions noise from vehicles and equipment during grading and excavation, construction of new facilities	LTSM

Table 5.12-2. Environmental effects on air quality.

Alternative(s)	Article # and Title	Level of CEQA Analysis	Nature of Potential Impact(s)	Effects
PRO	B107—Revision of Speed Limit Regulation for Thermalito Afterbay	Project	Long-term pollutant emission from watercraft	LTS

Coding:

B = Action with potential to result in a beneficial effect; could involve short-term, less-than-significant, construction-related impacts that would be avoided or reduced through the use of Best Management Practices (BMPs). See Appendix D.

LTS = Action that would result in less-than-significant impact on resource.

LTSM = Action that would result in less-than-significant impact on resource following mitigation.

Impact 5.12-a: Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

NO Under the No-Project Alternative, routine operations, maintenance, and recreational activities would continue. Emissions of gaseous and particulate pollutants, including GHGs, would not be anticipated to change noticeably from Existing Conditions. There would be **no impact** from these activities.

PRO Programs that would generate ROG, NO_x, PM_{2.5}, PM₁₀, and CO less than the thresholds noted in Sections 5.12.2 and 5.12.3.1 would not violate any air quality standard or contribute substantially to an existing or projected air quality violation and would therefore result in a **less-than-significant impact**.

No increases in GHG emissions are expected from the Proposed Project; therefore, there would be **no impact** from these activities.

Short-Term Construction

The programs listed in Table 5.12-2, with the exception of Water Quality Monitoring, would be anticipated to include projects that would include the use of construction equipment for creation of new facilities or improvement of existing facilities. With respect to air quality standards, the principal pollutant of concern from construction equipment engine exhaust is NO_x. Engine exhaust also includes ROG, PM₁₀, PM_{2.5}, and other pollutants. Grading and other ground disturbance activities produce particulates, PM₁₀, and PM_{2.5}. Painting and paving emit ROG.

While specific projects are not defined for some of the programs listed in Table 5.12-2, emissions were calculated for an “example” project that includes grading with 3 pieces of heavy equipment working concurrently, followed by construction with 3 pieces of heavy equipment; the construction would include painting and asphalt paving. Calculated emissions using URBEMIS2007 are shown in Table 5.12-3.

Table 5.12-3. Sample project construction emissions.

	Maximum Daily Emissions—pounds/day				
	ROG	NO _x	PM ₁₀	PM _{2.5}	CO
Construction Emissions	5	29	100	22	17
Construction Emissions— with BMPs	5	29	11	4	17
Action Level Thresholds	137	137	80	55	550
Level A thresholds	<25	<25	<80	None	
Level B thresholds	25	25	80		
Level C thresholds	137	137	137		

As shown in the table, emissions of PM₁₀ from the modeled project would exceed the BCAQMD action level threshold of 80 pounds/day, while emissions of ROG, PM_{2.5}, and CO are all less than the thresholds. The scenario modeled using URBEMIS2007 assumes a complete lack of dust control measures, which is neither realistic nor consistent with BMPs adopted for the project. In accordance with standard dust control practice and BCAQMD guidance, BMPs would be incorporated into each construction project to reduce potential impacts to a **less-than-significant** level.

As shown in Table 5.12-3, the calculations derived from the modeled scenario with incorporation of standard BMPs (e.g., watering active grading areas at least two times per day and limiting speeds on unpaved roads to 15 miles per hour or less) indicate that the implementation of these measures would reduce PM₁₀ emissions to a **less-than-significant** level and less than the Level A threshold for PM₁₀ of the BCAQMD.

Table 5.12-3 also shows that NO_x emissions on some projects may exceed Level A thresholds. The *Indirect Source Review Guidelines* require SMM for all projects and BMM where emissions exceed Level A. The guidelines do not provide SMM or BMM for construction-related NO_x emissions. For large development projects, the Sacramento Metropolitan AQMD (SMAQMD) and San Joaquin Valley APCD (SJVAPCD) have established NO_x construction mitigation procedures whereby a fleet of construction equipment is required to reduce overall emissions at least 20 percent as compared to the statewide averages for the specific fleet. This procedure, while effective for large projects, is neither necessary nor appropriate for the small projects anticipated for the Oroville Facilities.

In order to minimize NO_x emissions during construction, Mitigation Measure 5.12-a1 would be incorporated into the specifications for each construction project. These measures would reduce potential impacts related to NO_x emissions to **less than significant**.

Some of the projects implied by the programs listed in Table 5.12-2 would be of the order of magnitude of the “sample” project described above; many would be of lesser magnitude; some projects could be more intense. (Typical projects are discussed further in Section 5.12.4.2 below.) As the emissions of the mitigated “sample” project are less than the significance thresholds, it is concluded that the air quality impacts of the

programs listed in Table 5.12-2 would be **less-than-significant**.

One program, the Fuel Load Management Program, would have the potential to violate an air quality standard. Fuel management programs may include prescribed burning. Smoke from fires can be a source of high concentrations of particulates, including PM₁₀ and PM_{2.5}. If the fuel management projects were limited to mechanical treatment for fuel removal, the sources of emissions would be construction equipment and ground disturbance, and air quality impacts would be less-than-significant, as described above. If the projects include prescribed burns, the impact would be **potentially significant**. With implementation of mitigation measure 5.12-a2, this impact would be reduced to **less-than-significant**.

Long-Term Operations

Table 5.12-2 shows the programs that would have a continuing potential for air quality impacts. Each of these programs includes ongoing monitoring that would entail the use of light vehicles and watercraft. For some of the programs, the monitoring would likely be infrequent, such as once every 3 years or 5 years. Overall, the emissions from light vehicles and watercraft used in these programs would be very small and **less-than-significant**.

The goals of most of the programs listed in Table 5.12-2 are to improve the aquatic habitat, and these programs would not generate a noticeable increase in use of the recreational facilities. It is presumed that the projects that improve recreation facilities and add campsites would induce more recreational visitors, and would increase the number of vehicle trips to and from the area. Provision of up to 15 new campsites at Loafer Creek could generate additional traffic, but the additional number of trips would be very small when compared with existing traffic. Therefore, the impact would be **less-than-significant**.

FERC

Impacts on air resources under the FERC Staff Alternative would be similar to those under the Proposed Project. The FERC Staff Alternative includes more robust monitoring of the Gravel Supplementation and Improvement Program (SA Article A102) and earlier implementation of the Riparian and Floodplain Improvement Program (SA Article A106). These impacts would be considered **less-than-significant**.

Mitigation measure 5.12-a1: Utilize Low-NO_x Diesel Fuel Where Available.

PRO, FERC The following requirements would be included in the specifications of each project:

Each contractor and subcontractor shall utilize low-NO_x diesel fuel in construction equipment, such as PuriNO_x, unless it can be demonstrated that such fuel is not available in the project area.

Mitigation measure 5.12-a2: Conduct Prescribed Burns in Accordance with the Rules of BCAQMD.

PRO, FERC If projects developed under the Fuel Load Management Program include prescribed burns, the burns would be planned and coordinated with the BCAQMD in accordance with their Rule 309—Wildland Vegetation Management Burning. All prescribed burns would be approved by BCAQMD prior to execution. This mitigation measure would ensure that prescribed burns would be designed and conducted to avoid significant PM₁₀ and PM_{2.5} concentrations. Consequently, the impact would be **less-than-significant**.

Impact 5.12-b: Conflict with or obstruct implementation of an applicable air quality plan.

NO Under the No-Project Alternative, routine operations, maintenance, and recreational activities would continue. Emissions of gaseous and particulate pollutants, including GHGs, would not be anticipated to change noticeably from Existing Conditions. There would be **no impact** from these activities.

PRO, FERC Air quality planning in the Northern Sacramento Valley Air Basin (NSVAB) has been undertaken on a joint basis by the air districts in seven counties, including Butte County. The current plan, the 2003 AQAP, is an update of plans prepared in 1994, 1997, and 2000. The purpose of the plan is to achieve and maintain healthful air quality throughout the air basin. The 2003 AQAP addresses the progress made in implementing the 2000 plan and proposes modifications to the strategies necessary to attain the California ambient air quality standard for the 1-hour ozone standard at the earliest practicable date.

BCAQMD has set conservative thresholds to support the goals of the AQAP. As described in Impact 5.12-a, no significance thresholds for ozone precursors would be exceeded. Further, mitigation measures have been included in the program analysis that would further reduce NO_x emissions. It is concluded that the

proposed programs would not obstruct implementation of the AQAP and the impact would be **less than significant**.

Mitigation measure 5.12-b: No mitigation is required.

Impact 5.12-c: Expose sensitive receptors to substantial pollutant concentrations.

NO Under the No-Project Alternative, routine operations, maintenance, and recreational activities would continue. Emissions of gaseous and particulate pollutants would not be anticipated to change noticeably from Existing Conditions. Some of these activities may expose residents or persons involved in recreational activities to pollutants, such as dust and the exhaust from watercraft engines and maintenance vehicles and equipment. The quantity of pollutants would not be substantial and the impact would be **less-than-significant**.

PRO Each of the proposed programs of Table 5.12-2, with the exception of the Lake Oroville Cold Water Fishery Improvement and Comprehensive Water Quality Monitoring Programs, could include projects with the potential for the generation of dust from grading activities or diesel engine exhaust from construction equipment, or both. If the grading work was performed in close proximity to sensitive receptors, there would be a potential for exposure to substantial concentrations of pollutants. Therefore, there would be a **potentially significant** impact. With implementation of mitigation measure 5.12-c, this impact would be reduced to less-than-significant.

Particulate exhaust emissions from diesel-fueled engines (diesel PM) were identified as a TAC by ARB in 1998. Implementation of some projects would result in the generation of diesel PM emissions from the use of off-road diesel equipment required for site grading and excavation, paving, and other construction activities. According to ARB, the potential cancer risk from the inhalation of diesel PM outweighs the potential non-cancer health impacts (ARB 2003).

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally

exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time.

For the projects anticipated from the programs listed in Table 5.12-2, the use of mobile equipment would be temporary and project construction activities would not be atypical in comparison to similar development-type projects (i.e., no excessive material transport or unique operations requiring concentrated equipment groups), short-term construction activities would not result expose sensitive receptors to substantial TAC concentrations. This would be a **less-than-significant** impact.

NOA was identified as a TAC by ARB in 1986. Exposure to soil dust containing asbestos can occur from dust raised from unpaved roads and driveways covered with crushed serpentine, and construction and grading activities. As shown in Figure 5.12-1, there are several unpaved project access roads located in areas that are more likely to contain NOA. These include Bardee's Bar Road, a portion of Poe Powerhouse Road immediately north of the Poe Powerhouse, and another portion of Poe Powerhouse Road near the Big Bend 4-Wheel Drive Access. The Proposed Project does not include any construction or improvement activities (e.g., resurfacing) on these roadways. With respect to long-term operations, any such activities that would occur as part of roadway maintenance would comply with ARB's Asbestos ACTMs (Title 17, California Code of Regulations Sections 93105 and 93106) and BCAQMD Rule 1000, as required by law. Section 93106, which took effect in November 2001, prohibits the sale or use of restricted material for unpaved surfacing unless it has been tested and found to have an asbestos content that is less than 0.25 percent. In addition, implementation of the Proposed Project would not be anticipated to result in a substantial increase in vehicle travel on these roadways segments. Thus, long-term operations would not expose sensitive receptors to substantial TAC concentrations. This would be a **less-than-significant** impact.

FERC

Impacts on air resources under the FERC Staff Alternative would be similar to those under the Proposed Project. The FERC Staff Alternative includes an earlier implementation of the Riparian and Floodplain Improvement Program (SA Article A106). These impacts would be considered **less-than-significant**.

Mitigation measure 5.12-c: Include Dust Control Measures in Project Specifications.

PRO, FERC

If projects developed under the programs included in Table 5.12-1 include grading, the dumping of soil or gravel, or similar dust-generating actions, the following requirements shall be included in project specifications:

Persons performing grading, excavation, or similar dust-generating activities shall take every reasonable precaution not to cause or allow the emissions of fugitive dust to be airborne into areas occupied by residents or persons visiting the areas adjacent to the work site. Reasonable precautions shall include, but are not limited to:

- The use of water or chemicals for control of dust in active grading areas or on stockpiles;
- The suspension of activities during periods of high winds; and
- The temporary closing of use areas downwind of the grading site.

Implementation of this mitigation measure would ensure that sensitive receptors would not be exposed to substantial pollutant concentrations and the impact would be **less-than-significant**.

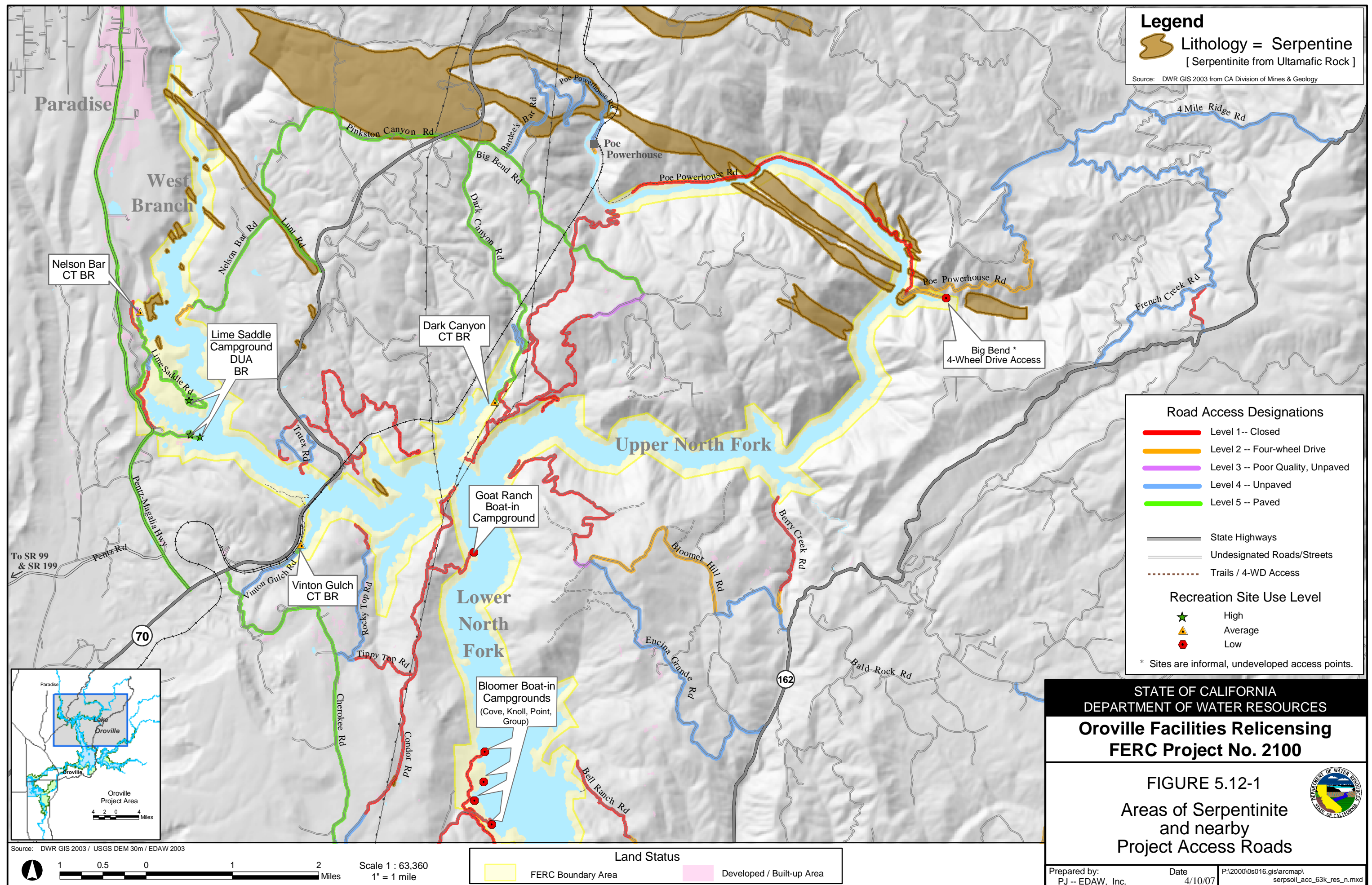
Impact 5.12-d: Create objectionable odors affecting a substantial number of people.

NO

Under the No-Project Alternative, routine operations, maintenance, and recreational activities would continue. Emissions of substances with objectionable odors would not be anticipated to change noticeably from Existing Conditions. There would be **no impact** from continuation of these activities.

PRO

Some of the proposed programs of Table 5.12-1 may have the potential for the short-term generation of odors if soil from lake or channel bottoms were disturbed. Asphalt paving on some projects may generate odors for a few hours. It is unlikely that there would be a substantial number of people in the area during these occasional occurrences. Because of the short period of odors and the small number of people affected, the impact would be **less-than-significant** and no mitigation would be required.



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FERC Impacts on air resources under the FERC Staff Alternative would be similar to those under the Proposed Project. The FERC Staff Alternative includes more robust monitoring of the Gravel Supplementation and Improvement Program (SA Article A102) and earlier implementation of the Riparian and Floodplain Improvement Program (SA Article A106). These impacts would be considered **less-than-significant** and no mitigation would be required.

Impact 5.12-e: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region of influence is nonattainment under an applicable federal or State ambient air quality standard.

NO Under the No-Project Alternative, routine operations, maintenance, and recreational activities would continue. Emissions of gaseous and particulate pollutants, including GHGs, would not be anticipated to change noticeably from Existing Conditions. There would be **no impact** from these activities.

PRO The region is nonattainment relative to a federal or state standard for ozone and PM₁₀. NO_x and ROG are the precursor pollutants for ozone. As described for Impact 5.12-a, with incorporation of BMPs, ROG, PM_{2.5}, CO, and PM₁₀ emissions would be less than BCAQMD Level A thresholds. NO_x emissions would exceed the level B threshold without mitigation, but would be less than 25 percent of the significance threshold. With a number of projects occurring concurrently, the total emissions are anticipated to remain less than the action level thresholds. Therefore, the cumulative emissions of the programs would not be considerable and the impact would be **less-than-significant** and no further mitigation would be required.

FERC Impacts on air resources under the FERC Staff Alternative would be similar to those under the Proposed Project. The FERC Staff Alternative includes more robust monitoring of the Gravel Supplementation and Improvement Program (SA Article A102) and earlier implementation of the Riparian and Floodplain Improvement Program (SA Article A106). These impacts would be considered **less-than-significant** and no further mitigation would be required.

5.12.4.2 Project-Level Impacts and Mitigation Measures

Continuation of operations, maintenance, and recreation activities, construction of new or improved facilities, implementation of new projects involving ground disturbance and

the use of construction equipment, and operations of additional vehicles and watercraft would result in the emission of air pollutants.

Impact 5.12-a: Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

NO Under the No-Project Alternative, routine operations, maintenance, and recreational activities would continue. Emissions of gaseous and particulate pollutants would not be anticipated to change noticeably from the existing conditions. There would be **no impact** from these activities.

PRO BCAQMD does not have quantitative thresholds to define CEQA significance or substantial quantities of emissions. However, as described in Section 5.12.3.1, thresholds for ROG, NO_x, and PM₁₀ may be inferred from the BCAQMD *Indirect Source Review Guidelines*, and thresholds for PM_{2.5} and CO were taken from another air management district. Projects with emissions less than these thresholds would have a **less-than-significant impact**.

No increases in GHG emissions are expected from the Proposed Project; therefore, there would be **no impact** from these activities.

Short-term Construction

The actions listed in Table 5.12-2 would likely use diesel engine construction equipment for creation of new facilities or improvement of existing facilities. With respect to air quality standards, the principal pollutant of concern from construction equipment engine exhaust is NO_x. Engine exhaust also includes ROG, PM₁₀, PM_{2.5}, and other pollutants. Grading and other ground disturbance activities produce particulates, PM₁₀, and PM_{2.5}. Painting and paving emit ROG.

Emissions were calculated for a “sample” 12-month project that includes grading with 3 pieces of heavy equipment working concurrently, followed by construction with 3 pieces of heavy equipment; the construction would include painting and asphalt paving.

As shown in Table 5.12-3 above, emissions of PM₁₀ without use of standard BMPs would exceed the BCAQMD action level threshold while emissions of ROG, PM_{2.5}, and CO would be less than these thresholds. The initial scenario in the URBEMIS model assumes a complete lack of dust control measures, which is neither realistic nor consistent with BMPs adopted for the project. In accordance with good dust control practice and BCAQMD guidance, BMPs for dust control (see Appendix D of the DEIR) would be incorporated

into each program and project.

The modeled project scenario, including the use of BMPs shown in Table 5.12-3, includes actions such as the watering active grading areas at least 2 times per day and limiting speeds on unpaved roads to 15 miles per hour or less. As shown in the table, the implementation of these measures would reduce PM₁₀ emissions to less than the Level A threshold and the impact would be **less than significant**.

Table 5.12-3 shows that NO_x emissions associated with some proposed projects may exceed Level A thresholds. The *Indirect Source Review Guidelines* (BCAQMD 1997) require SMM for all projects and BMM where emissions exceed Level A. The Guidelines do not provide SMM or BMM for construction-related NO_x emissions. For large development projects, the Sacramento Metropolitan AQMD (SMAQMD) and San Joaquin Valley APCD (SJVAPCD) have established NO_x construction mitigation procedures whereby a fleet of construction equipment is required to reduce overall emissions at least 20 percent as compared to the statewide averages for the specific fleet. This procedure, while effective for large projects, is neither necessary nor appropriate for the projects anticipated under a new FERC license for the Oroville Facilities.

In order to minimize NO_x emissions during construction, Mitigation Measure 5.12-a1 would be incorporated into the specifications for each project. The resultant impact would be **less than significant**.

Long-term Operations

Table 5.12-2 shows the actions that would have a continuing potential for air quality impacts. Each of these projects, except the revision of the speed limit for Thermalito Afterbay, includes ongoing monitoring that would entail the use of light vehicles and watercraft. For some of the projects, the monitoring would be infrequent, such as once every 3 years or 5 years. Overall, the emissions from these projects would be very small and **less-than-significant** and no mitigation would be required.

Revision of the speed limit for Thermalito Afterbay would include allowing higher legal speeds on the portion of the afterbay south of State Route (SR) 162, and improving enforcement of the 5-mph speed limit on the remainder of the afterbay. These would be somewhat offsetting actions, but the net effect would likely be the displaced use of larger boats south of SR 162 and increased

exhaust emissions. No data are available for emissions calculations, but the likely increase in number of boats and resultant emissions would be small with respect to the de minimis thresholds and the impact would be **less-than-significant** and no mitigation would be required.

In addition to the actions of Table 5.12-2, it is presumed that the projects that improve recreation facilities and add campsites would induce more recreational visitors, and would increase the number of vehicle trips to and from the area. While the number of additional visitors has not been estimated, emission calculations were made using URBEMIS2007 to indicate the order of magnitude of air quality impact. It was assumed that the improved and additional facilities would add an average of 500 trips per day, and that the average trip distance would be 30 miles. Calculated emissions are shown in Table 5.12-4.

Table 5.12-4. Potential operations emissions from increase in recreational visitors.

	Maximum Daily Emissions – pounds/day				
	ROG	NO _x	PM ₁₀	PM _{2.5}	CO
Operations Emissions	15	22	26	5	212
Significance thresholds	137	137	80	55	550
Level A thresholds	<25	<25	<80	None	
Level B thresholds	25	25	80		
Level C thresholds	137	137	137		

As shown in the table, emissions of each of the analyzed pollutants would be less than the significance thresholds. Therefore, this impact is considered **less than significant** and no mitigation is required.

The *Indirect Source Review Guidelines* (BCAQMD 1997) require SMM for all projects, including those where emissions are less than Level A thresholds. Most non-construction measures included in the BCAQMD Guidelines and in similar guidelines from other air districts are directed toward typical residential and commercial developments and are focused on trip reduction. These measures are not applicable to the proposed project.

It is noted that the provision of additional campsites may result in the elimination of some existing trips because people who currently make serial day trips because they cannot stay overnight would be able to stay, thereby eliminating the intermediate trips between the start and end of the visit.

FERC Impacts on air resources under the FERC Staff Alternative would be similar to those under the Proposed Project. The FERC Staff Alternative includes more robust monitoring of the Gravel Supplementation and Improvement Program (SA Article A102) and earlier implementation of the Riparian and Floodplain Improvement Program (SA Article A106). These impacts would be considered **less-than-significant** and no mitigation would be required.

Mitigation Measure 5.12-a1: Utilize Low-NO_x Diesel Fuel Where Available.

PRO, FERC The following requirements shall be included in the specifications of each project:

Each contractor and subcontractor shall utilize low-NO_x diesel fuel in construction equipment, such as PuriNO_x, unless it can be demonstrated that such fuel is not available in the project area.

Impact 5.12-b: Conflict with or obstruct implementation of an applicable air quality plan.

NO Under the No-Project Alternative, routine operations, maintenance, and recreational activities would continue. Emissions of gaseous and particulate pollutants would not be anticipated to change noticeably from the existing conditions. There would be **no impact** from these activities.

PRO, FERC Air quality planning in the NSVAB has been undertaken on a joint basis by the air districts in seven counties, including Butte County. The current plan, the 2003 AQAP, is an update of plans prepared in 1994, 1997, and 2000. The purpose of the plan is to achieve and maintain healthful air quality throughout the air basin. The 2003 AQAP addresses the progress made in implementing the 2000 plan and proposes modifications to the strategies necessary to attain the California ambient air quality standard for the 1-hour ozone standard at the earliest practicable date.

The *Indirect Source Review* Guidelines of the BCAQMD (1997) establish conservative thresholds to support the goals of the AQAP. As described in Impact 5.12-a, no significance thresholds for ozone precursors would be exceeded. Further, mitigation measure 5.12-a2 has been included in the program analysis to further reduce NO_x emissions. It is concluded that the proposed programs and projects would not obstruct implementation of the AQAP and the impact would be **less than significant**.

Impact 5.12-c: Expose sensitive receptors to substantial pollutant concentrations.

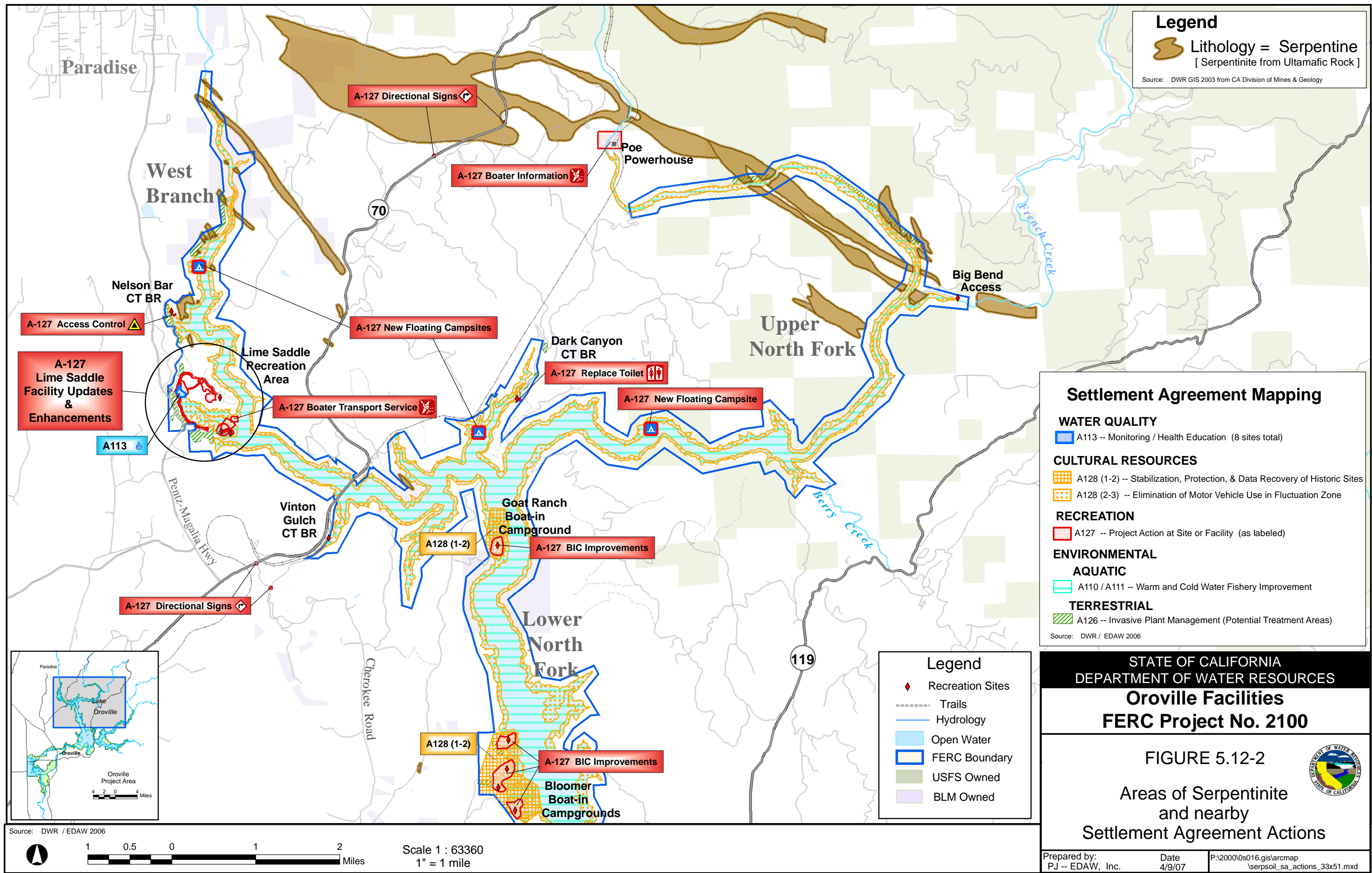
NO Under the No-Project Alternative, routine operations, maintenance, and recreational activities would continue. Emissions of gaseous and particulate pollutants would not be anticipated to change noticeably from the existing conditions. Some of these activities may expose residents or persons involved in recreational activities to pollutants, such as dust and the exhaust from watercraft engines and maintenance vehicles and equipment. The quantity of pollutants would not be substantial and the impact would be **less-than-significant**.

PRO Each of the proposed actions of Table 5.12-2 would have the potential for the generation of dust from grading activities or diesel engine exhaust from construction equipment, or both. If the grading work was performed in close proximity to sensitive receptors, there would be a potential for exposure to substantial concentrations of PM₁₀ and PM_{2.5}. Therefore, there would be a **potentially significant impact**.

Construction of the projects listed in Table 5.12-2 would result in short-term diesel exhaust emissions from on-site heavy-duty equipment required for site grading and excavation, handling of boulders and other materials, paving, and other construction activities. Particulate exhaust emissions from diesel-fueled engines (diesel PM) were identified as a TAC by ARB in 1998. According to ARB, the potential cancer risk from the inhalation of diesel PM outweighs the potential non-cancer health impacts (ARB 2003).

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time.

For the projects listed in Table 5.12-2, the use of mobile equipment would be temporary and project construction activities would not be atypical in comparison to similar development-type projects (i.e., no excessive material transport or unique operations requiring concentrated equipment groups). In addition, as shown in Figure 5.12-2, the only action that would occur in an area that is



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more likely to contain NOA would be one action contained within SA A127 that involves sign placement in the northern portion of the FERC Project boundary. This action would not be anticipated to include any major construction or grading operations, as it only entails installing directional signs for Dark Canyon Car-Top Boat Ramp at SR 70. Nonetheless, the disturbance of any portion of this area that is more likely to contain NOA from construction or grading operations would comply with ARB's Asbestos ACTM (Title 17, California Code of Regulations Section 93105) and BCAQMD Rule 1000, as required by law. Thus, short-term construction activities would not result expose sensitive receptors to substantial TAC concentrations. This would be a **less-than-significant** impact and no mitigation would be required.

The projects listed in Table 5.12-2 would not have the potential for exposure of sensitive receptors to substantial concentrations of pollutants, as these projects would use light vehicles and watercraft, and would not be occurring near sensitive receptors. There would be **no impact** and no mitigation would be required.

FERC

Impacts on air resources under the FERC Staff Alternative would be similar to those under the Proposed Project. The FERC Staff Alternative includes more robust monitoring of the Gravel Supplementation and Improvement Program (SA Article A102) and earlier implementation of the Riparian and Floodplain Improvement Program (SA Article A106). These impacts would be considered **less-than-significant** and no mitigation would be required.

Mitigation measure 5.12-c: Include dust control measures in project specifications.

PRO, FERC

If projects in Table 5.12-2 include grading, the dumping of soil or gravel, or similar dust-generating actions, the following requirements shall be included in project specifications:

Persons performing grading, excavation or similar dust-generating activities shall take every reasonable precaution not to cause or allow the emissions of fugitive dust to be airborne into areas occupied by residents or persons visiting the areas adjacent to the work site. Reasonable precautions shall include, but are not limited to:

- The use of water or chemicals for control of dust in active grading areas or on stockpiles;

- The suspension of activities during periods of high winds; and
- The temporary closing of use areas downwind of the grading site.

Implementation of this mitigation measure would ensure that sensitive receptors would not be exposed to substantial pollutant concentrations and the impact would be **less-than-significant**.

Impact 5.12-d: Create objectionable odors affecting a substantial number of people

NO Under the No-Project Alternative, routine operations, maintenance, and recreational activities would continue. Emissions of substances with objectionable odors would not be anticipated to change noticeably from the existing conditions. There would be **no impact** from continuation of these activities.

PRO, FERC Some of the proposed actions of Table 5.12-2 may have the potential for the short-term generation of odors if soil from lake or channel bottoms were disturbed. Some projects may include asphalt paving that may generate odors for a few hours. It is unlikely that there would be a substantial number of people in the area during these occasional occurrences. Because of the short period of odors and the small number of people affected, the impact would be **less-than-significant** and no mitigation would be required.

Impact 5.12-e: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region of influence is nonattainment under an applicable federal or State ambient air quality standard.

NO Under the No-Project Alternative, routine operations, maintenance, and recreational activities would continue. Emissions of gaseous and particulate pollutants would not be anticipated to change noticeably from the existing conditions. There would be **no impact** from these activities.

PRO The region is nonattainment relative to a federal or State standard for ozone and PM₁₀. NO_x and ROG are the precursor pollutants for ozone. As described for Impact 5.12-f, NO_x emissions for a “sample” project would be less than 5 tons per year; ROG emissions would be less than 1 ton per year; PM₁₀ emissions would be less than 2 tons per year. Increasing visits to the area could add 5 tons per year of NO_x and PM₁₀ and 3 tons per year of ROG. With a number of projects occurring concurrently, the total emissions would remain less than the 100-tons-per-year levels

where emissions are considered de minimis. Therefore, the cumulative emissions of the projects would not be considerable and the impact would be **less-than-significant** and no mitigation would be required.

FERC Impacts on air resources under the FERC Staff Alternative would be similar to those under the Proposed Project. The FERC Staff Alternative includes more robust monitoring of the Gravel Supplementation and Improvement Program (SA Article A102) and earlier implementation of the Riparian and Floodplain Improvement Program (SA Article A106). These impacts would be considered **less-than-significant** and no mitigation would be required.

Mitigation measure 5.12-e: No mitigation is required.

Section 5.14.4 Impacts and Mitigation Measures, page 5.14-9:

NO Additionally, the population directly and indirectly supported by visitor and O&M spending is projected to increase from a current level of 2,360 to 2,770 in 2020, representing a 410-person increase. This increase in population would generate an additional 1,640 trips daily that would use roads throughout the county that provide access to the project area. This increase in countywide traffic volume in the county would be increase spread across all county roads providing access to the project and would be too small to have a significant impact on operating LOS. Thus, there would be a **less-than-significant impact** associated with the No-Project Alternative.

CHAPTER 6.0 OTHER STATUTORY REQUIREMENTS

Section 6.2.5.2 Water Quality

Cumulative Effects of the Alternatives and Future Related Actions, page 6.2-20:

No-Project Alternative

Extractive land use practices upstream of Lake Oroville are expected to continue and result in the continued release of metals into the Feather River and Lake Oroville. These metals would continue to be transported through the water column, accumulate in the fish and be sequestered within the sediments trapped in Lake Oroville.

Section 6.2.10.2 Cumulative Effects of the Project Alternatives and Future Related Actions

Future Traffic Growth, pages 6.2-57 to 6.2-59:

The 2004 Regional Transportation Plan includes information regarding future traffic volumes and Levels of Service on State highways and key County roads based on peak hour traffic volume. The forecasts for the State highways have been interpolated to daily traffic volumes and are presented in Table 6.2-4. The forecast volumes for several segments on SR 99 and SR 162 have been adjusted to reflect recent data provided by the Caltrans District 3 Office of Transportation Planning–North. As noted, background traffic growth on the regional circulation system is projected to result in LOS F conditions at many locations on SR 70, SR 99 and SR 162.

Table 6.2-4. Year 2025 annual average daily traffic.

Route	From (Postmile)	To (Postmile)	2005 Annual Average Daily Traffic	2025 Estimated Daily Traffic	Year 2025 Level of Service
SR 70	Yuba County line (0.00)	Beginning of Freeway south of Oroville (13.51)	12,100 to 14,900	22,600	F
	Beginning of freeway South of Oroville	SR 162 (Oroville) (13.90)	14,900	32,000	F
	SR 162	Montgomery Street (Oroville) (14.61)	23,300 <u>23,600</u>	45,200 <u>48,500</u>	C
	Montgomery Street	Grand Avenue (Oroville) (15.43)	31,500	45,000	C
	Grand Avenue	Nelson Avenue (Oroville) (15.72)	23,600	48,500	C
	Nelson Avenue	End of Freeway (20.14)	21,600	40,600	C
	End Of Freeway	SR 149 (20.48)	21,600	40,600	C
	SR 149	SR 191 (21.87)	8,200	21,000	F
	SR 191	Plumas County line (48.08)	3,100 to 1,450	4,800 to 10,000	D
SR 99	Sutter County line (0.00)	Wilson Street (Gridley) (4.12)	16,400 to 19,200	29,000	F
	Wilson Street (Gridley)	Spruce Street (Gridley) (4.38)	23,100	35,000	F

Table 6.2-4. Year 2025 annual average daily traffic.

Route	From (Postmile)	To (Postmile)	2005 Annual Average Daily Traffic	2025 Estimated Daily Traffic	Year 2025 Level of Service
SR 99	Spruce Street (Gridley)	SR 162 (east) (13.16)	15,100 to 10,900	26,000 to 22,000	F
	SR 162 (east)	SR 149 (21.81)	11,100	21,000	F
	SR 149	Begin Freeway (30.40)	25,500	43,000	F
	Begin Freeway	Skyway (Chico) (30.60)	34,000	48,000 61,200	F
	Skyway	East 20 th St (Chico) (31.50)	52,000	64,000 85,800	D -E
	East 20 th St	SR 32 (Chico) (32.45)	72,000	86,000 118,800	E -F
	SR 32	Cohassatt Hwy (Chico) (34.25)	75,000 to 61,000 62,000	92,000 to 82,000 111,600	E -F
	Cohassatt Hwy	East Avenue (Chico) (34.93)	42,500	85,000	D
	East Avenue	End of Freeway (37.32)	29,000 to 19,500	69,000 to 29,000	D
	End of Freeway	Tehama County Line (45.98)	19,500 to 11,900	29,000 to 20,000	F
SR 162	Glenn County line (0.00)	SR 99 (Biggs) (9.73)	1,500 to 1,050	3,000 to 2,000	C
	SR 99 (9.73)	12 th Street (Oroville) (14.96)	2,700 to 8,600	4,000 to 12,000	C
	12 th Street	SR 70 (Oroville) (15.83)	13,200	30,800	F
	SR 70	Washington Ave (Oroville) (17.55)	32,000 to 30,500	42,500 to 40,500 50,300	D -E
	Washington Avenue	Lower Wyandotte Road (Oroville) (18.01)	29,000	35,000 47,900	F
	Lower Wyandotte Rd	Foothill Blvd (18.46)	20,900	33,000	F
	Foothill Blvd	Canyon Drive (21.26)	12,400 to 11,000	22,500 to 29,000	F
	Canyon Drive	Forbestown Road (24.19)	7,600 to 4,550	10,000 to 6,000	D

Table 6.2-4. Year 2025 annual average daily traffic.

Route	From (Postmile)	To (Postmile)	2005 Annual Average Daily Traffic	2025 Estimated Daily Traffic	Year 2025 Level of Service
SR 162	Forbestown Road	Foreman Road (31.07)	1,850 to 1,500	2,500	C

Source: 2004 Regional Transportation Plan

Proposed Project, page 6.2-62:

Although the Proposed Project would add to the overall cumulative impact on local public service providers, ~~potentially requiring the development of facilities that could result in physical effects on the environment, under CEQA, the Proposed Project's contribution to the significant cumulative public services impact would be considered significant only if the project's contribution is cumulatively considerable. As discussed previously, the Proposed Project's incremental contribution to the cumulative demand for local public services is anticipated to be minor. Additionally, DWR has previously expressed a willingness to provide funding for mitigation of public services. impacts, this would fund its fair share of measures designed to alleviate the project's cumulative impact. This offer was made to Butte County outside of the CEQA process for governmental services in the context of settlement discussions between DWR and Butte County. DWR did not consider this funding to be in the form of CEQA-required mitigation for a significant impact to the physical environment.~~ The Proposed Project's contribution to cumulative impacts related to the provision of public services would be considered **less-than-significant**.

6.2.11 Agricultural Resources, pages 6.2-62 to 6.2-65:

The following section replaces in its entirety the cumulative Agricultural Resources discussion included in the DEIR. For ease of reading, it is included without strikethrough and underlining.

A qualitative effects assessment was completed to evaluate the potential cumulative effects of the No-Project Alternative, Proposed Project, and FERC Staff Alternative on agricultural resources in the vicinity of the Oroville Project area. The effects assessment focuses on the incremental effects of these alternatives on water temperature changes that could potentially affect rice production over time and in combination with other past, current, and reasonably foreseeable future projects. Because water temperature-related effects on rice production reportedly occur between planting and the reproductive phase of rice growth, the period of primary concern is from May through July.

6.2.11.1 Cumulative Effects of the Project and Past and Present Related Actions

Prior to construction of the Oroville Facilities, water and irrigation districts in Butte County constructed several projects for diverting water from the Feather River for irrigation purposes. The first of these projects was the Butte County Canal, which was constructed in 1905. Water entered the Butte County Canal through eight concrete gates located near the current Thermalito Afterbay Outlet, and was then delivered to areas north and south of the community of Gridley, up to 30 miles from the river. To facilitate summer diversions, Hazelbush Dam was constructed in 1907 near the intake of the Butte County Canal. The structure was a rock barrier that raised the water level several feet to provide adequate head for summer diversions into the canal. The barrier was reconstructed several times during its existence as a result of repeated damage associated with flood events. Specifically, high flows during flood events displaced portions of Hazelbush Dam downstream, which were required to be replaced to allow the dam to remain functional.

The Western Canal was completed by the Feather River Canal Company in 1915. The purpose of the Western Canal was to deliver water northeast of the community of Biggs and east of the community of Nelson. Additionally, a flashboard dam referred to as the Western Canal Dam was constructed across the Feather River at River Mile 63 for the purpose of diverting water into the Western Canal. Western Canal Dam was reinstalled every year due to damage from annual high flows and flood events.

Prior to the construction of the Oroville Facilities, several hydroelectric dams were constructed on the tributaries upstream of the current FERC Project boundary. These hydroelectric facilities altered the hydrology and water temperatures of the lower Feather River and may have cumulatively reduced the water temperatures at the historical points of diversion during the May-through-July rice water temperature sensitive growth stages by as much as several degrees.

In 1969, DWR executed two agreements; one with the Richvale Irrigation District, Biggs-West Gridley Water District, Butte Water District, and Sutter Extension Water District and one with PG&E, to resolve issues related to water deliveries to senior water rights holders. In 1986 PG&E assigned its agreement to the Western Canal Water District. The agreements acknowledge the new delivery points at Thermalito Afterbay and specify annual delivery amounts, rates of deliveries and timing of water diversions.

The construction of Thermalito Afterbay replaced the Hazelbush and Western Canal dams and diversion headworks, as well as several miles of irrigation canals (see Figure 6.2-2). The construction of the Oroville Facilities resulted in the diversion locations being relocated in the Thermalito Afterbay, which provides an opportunity for water to warm prior to diversion. The change in the diversion location also resulted in a reduction in the opportunity for water to warm in the river and in the foregone irrigation canal reaches prior to reaching the location of the current day Thermalito Afterbay diversions. It is uncertain which of the water warming opportunities (post facilities construction or prior to facilities construction) would result in greater water warming at the current diversion locations. The amount of warming that occurs in the Thermalito

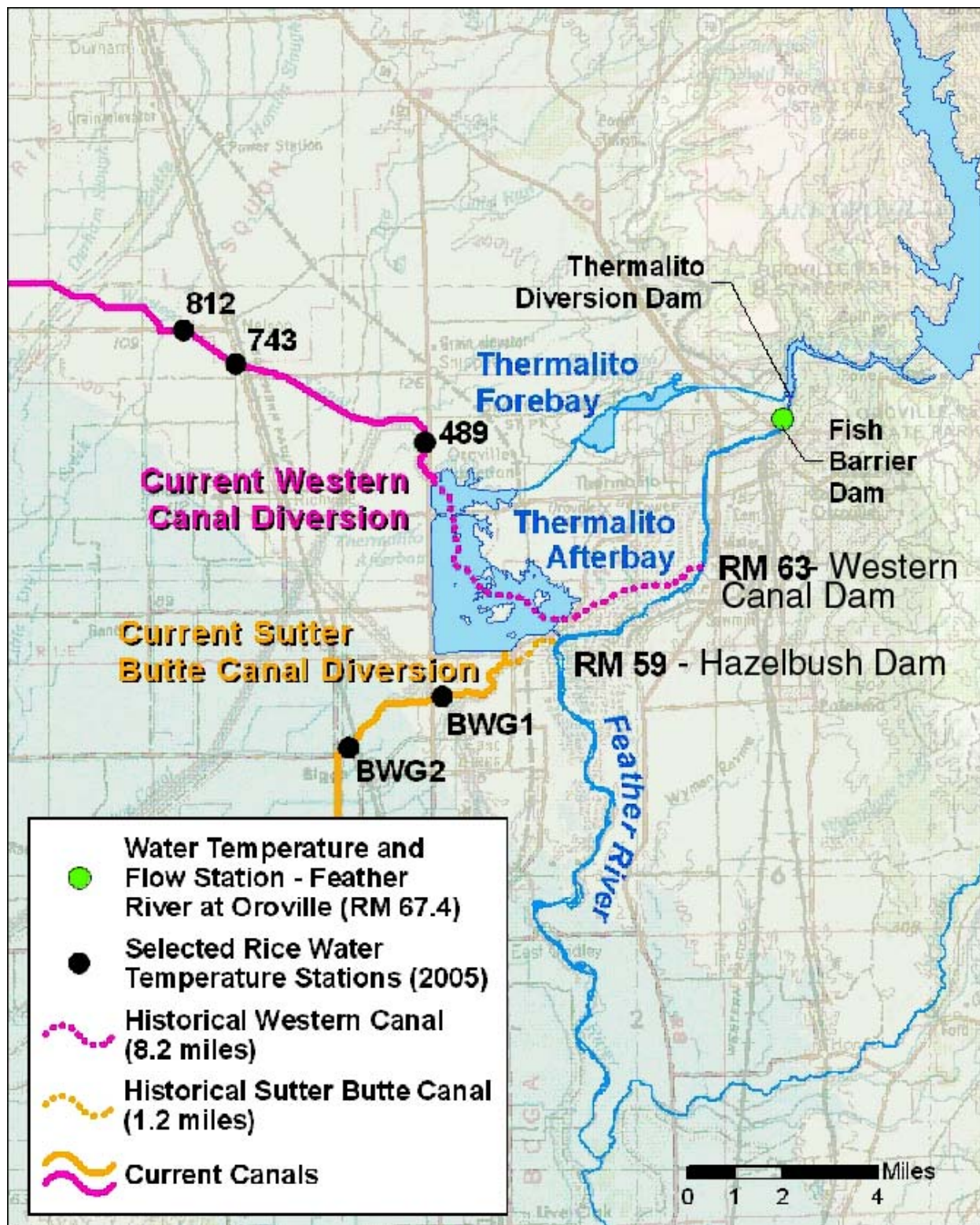


Figure 6.2-2. Change in water district conveyance with construction of Oroville Dam.

Afterbay is variable based on meteorological conditions (solar radiation and wind), and retention time of the water in the Afterbay (determined by agricultural diversion volumes, Thermalito Afterbay Outlet releases, and peaking and pump-back operations). Water enters the Thermalito Afterbay in the northern area of the Afterbay near the current day Western Canal Water District and northern Richvale Irrigation District diversions, resulting in, a generally shorter period of time prior to diversion than the southern Afterbay diversion location. The Sutter Butte diversion located in the southern area of Thermalito Afterbay services the Biggs West Gridley Water District, Butte Water District, and the southern service area of Richvale Irrigation District. The southern Thermalito Afterbay location of the Sutter Butte diversion allows water to have additional residence time in the Afterbay and therefore the opportunity for warming prior to diversion.

The effects of the construction of the Oroville Facilities on rice yields cannot be determined by a direct analysis due to the lack of availability of suitable rice yield data relevant to water temperature-related effects. Further complicating the interpretation of the Project's effect on rice yields is the fact that average rice yields have increased (California Rice Research Board Website 2008) substantially in the period since the construction of the Oroville Facilities. The factors that have contributed to the rice yield increase include: (1) changes in irrigation practices, such as laser leveling of fields; (2) introduction of new varieties of rice; and (3) improved rice production fertility and pest and weed management practices. Any historical data on rice yields that is available changes over time independently of water temperature effects, which makes this data unsuitable for purposes to determine yield changes that could be attributable to water temperature changes over time. As a result of the lack of available data to support a direct analysis of the effects of the construction of the Oroville Facilities on rice yields, an analysis of the change in source water temperatures is the best available indicator of the relative magnitude of those potential effects.

The USGS Oroville gage is the only location common to both water delivery paths (prior to and after construction of the Oroville Facilities) that has a usable water temperature record (see Oroville gage location identified as Water Temperature and Flow Station - Feather River at Oroville RM 67.4 in Figure 6.2-2). As will be explained further, the colder irrigation source water temperatures, as compared to the conditions prior to the construction of the Oroville Facilities, are not a result of the existence of the Facilities. They are, instead, due to the federal and State mandated operating requirements to deliver cooler water to the lower Feather River in order to support anadromous salmonids, as shown in Figure 6.2-3.

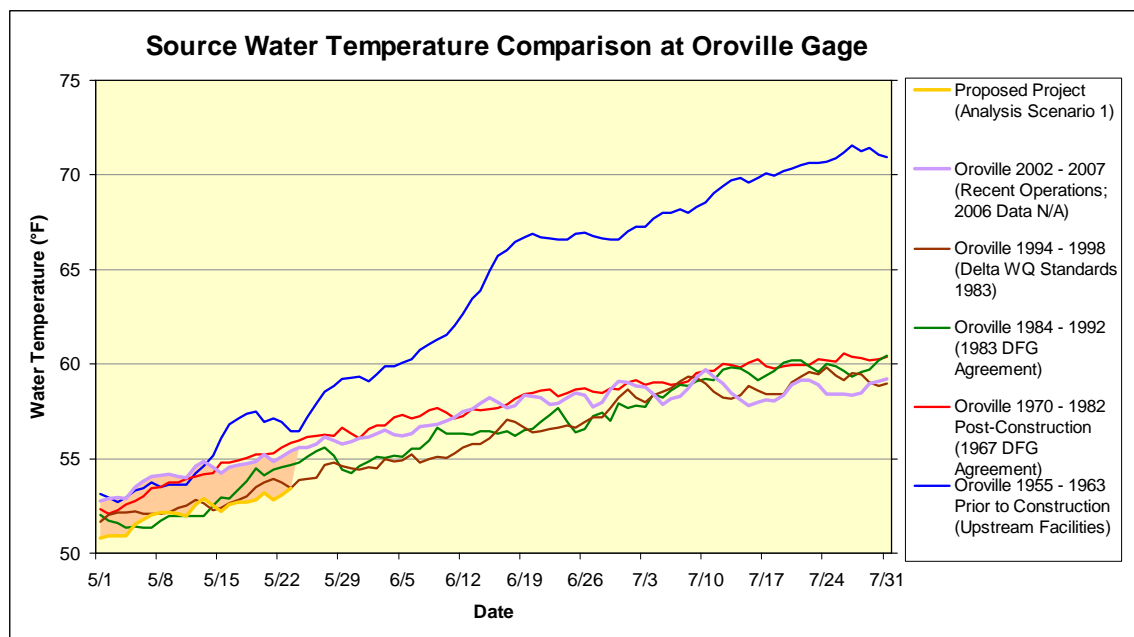


Figure 6.2-3. Source water temperatures at Oroville gage prior to and after Oroville construction.

An explanation of the graph depicted in Figure 6.2-3 is as follows:

- The blue line in the graph (legend: Oroville 1955-1963 Prior to Construction [Upstream Facilities]) shows the average daily water temperatures at the Oroville gage for the period from 1955 through 1963 for the water temperature-sensitive growth period for rice from May through July. This time period was chosen to display water temperatures prior to the construction of the Oroville Dam because the Oroville gage water temperature record begins during 1955, and construction activities likely influenced water temperatures from 1963 through the end of construction. Therefore, water temperatures at the Oroville gage during the 1955-1963 period would have been the result of the climatic and hydrologic conditions of the period and the operations of the existing upstream hydroelectric dams.
- The orange line in the graph (legend: Oroville 1970-1982 Post-Construction [1967 DFG Agreement]) shows the average daily water temperatures at the Oroville gage for the initial post-construction period of Oroville Dam from 1970 through 1982. The beginning of this time period was chosen for display of the Oroville gage water temperatures because, although the dam was closed during 1967, the reservoir did not fill until the latter part of 1969. Specifically, the Oroville Facilities had little control over water temperatures prior to the filling of the reservoir, but the water temperatures were influenced by the existence of the dam. Because water temperatures could be controlled somewhat by the Oroville Facilities, DFG requested specific water temperatures at the Feather River Fish Hatchery. Therefore, water temperatures at the Oroville gage during the 1970 through 1982 period were the result of water temperature requirements for the

Feather River Fish Hatchery established by a memorandum of understanding (MOU) between DFG and DWR describing operation of the Oroville Facilities, signed during 1967 (1967 Operating Agreement) (DWR 1967) (see Table 6.2-5).

- The green line in the graph (legend: Oroville 1984-1992 [1983 DFG Agreement]) shows the average daily water temperatures at the Oroville gage for the period from 1984 through 1992. Water temperatures at the Oroville gage during the 1984 through 1992 period were the result of water temperature requirements for the Feather River Fish Hatchery established by a MOU between DFG and DWR altering the operations described in the 1967 Agreement, signed during 1983 (1983 Operating Agreement)(DWR 1983) (see Table 6.2-5). Water temperatures for 1983 are not included in the analysis as it is uncertain what date the water temperature requirements for the hatchery prescribed in the 1983 Operating Agreement were put into effect.
- The brown line on the graph (legend: Oroville 1994-1998 [Delta WQ Standards 1983]) shows the average daily water temperature at the Oroville gage for the period from 1994 through 1998 (1993, 1999, and 2000 data not available). Water temperatures at the Oroville gage during the 1994 through 1998 period were the result of water temperature requirements for the Feather River Fish Hatchery established by the 1983 Operating Agreement with DFG, the 1993 NMFS BO for operation of the CVP and SWP (NMFS 1993a), and the 1995 USFWS BO for Delta smelt and Sacramento splittail (USFWS 1995). The 1993 and 1995 BOs did not change water temperature requirements or minimum flow requirements but reinforced those requirements prescribed in the 1983 Operating Agreement. Additionally, the 1995 BO mandated operational changes to comply with Delta X2 requirements (see USFWS 1995 for a description of X2) for the protection of winter-run Chinook salmon, Delta smelt and Sacramento splittail (NMFS 1993b, USFWS 1995) (see Table 6.2-5. Management for compliance with Delta X2 requirements altered the timing and volume of Oroville Facilities releases.
- The purple line on the graph (legend: Oroville 2002-2007 [Recent Operations; 2006 data NA]) shows the average daily water temperatures at the Oroville gage for the period from 2002 through 2007 (2006 data not available). Water temperatures at the Oroville gage during the 2002 through 2007 period were the result of water temperature requirements for the Feather River Fish Hatchery from the 1983 Operating Agreement with DFG and the 2001 and 2004 OCAP BOs water temperature requirements at Robinson Riffle (NMFS 2001, 2004) (see Table 6.2-5).
- The shaded area in the lower left portion of the graph is a depiction of the potential change in water temperatures that would occur with the implementation of the Proposed Project during the initial license period. As discussed in the DEIR Section 5.13, the Proposed Project is expected to result in a reduction in water temperatures at the agricultural diversions in the Thermalito Afterbay of 0°F to less than 2°F approximately 25 percent of the period from May through July. Since it is not possible to determine how the water temperature reduction of 0°F

to less than 2°F will be distributed during the rice water temperature sensitive growth period, the yellow highlighted area shows all of the reduction occurring at the beginning of the period. Although it is unlikely that the changes in water temperatures would be distributed in this manner, a comparison of water temperatures during the beginning of the water temperature-sensitive growth period for rice shows that the resulting water temperatures would only infrequently be outside of the ranges of water temperatures that have occurred during previously observed operating periods.

It should be noted, however, that it is not the Oroville Facilities themselves that have caused cold water to be delivered to the agricultural diverters, but rather the regulatory requirements placed upon the Facilities by fishery management agencies. As noted previously, the colder irrigation source water temperatures under Existing Conditions, compared to the conditions prior to the construction of the Oroville Facilities, are a result of the mandated operating requirements to deliver cooler water to the lower Feather River to support anadromous salmonids. In order to meet these temperature requirements, water released from the Oroville Facilities must be drawn from the cold water pool of the reservoir. The Oroville Dam water intake structure has a water temperature control device (stop logs) that allows selection of the water depth from which the release water is drawn. These stop logs and the water withdrawal depth from Oroville reservoir are managed for water temperature compliance with the aforementioned coldwater fisheries water temperature requirements. The Oroville Dam water intake structure is operationally capable of drawing water from near the surface.

Table 6.2-5. Water temperature requirements from Oroville Facilities construction through Proposed Project initial license period.

Date	1967 MOU (°F) ¹	1983 MOU (°F) ¹	2001 OCAP BO (°F) ¹		2004 OCAP BO (°F) ¹		EIR Proposed Project (°F)	
	FRFH ²	FRFH ²	FRFH ²	RR ³	FRFH ²	RR ³	FRFH ²	RR ³
Jan–Mar 31	<56	<56	<56	N/A	<56	N/A	55	56
April 1–May 15	51	51	51	N/A	51	N/A	55	
April				N/A		N/A		56
May 1–May 15				N/A		N/A		56 - 63 ⁴
May 16–May 31	55	55	55	N/A	55	N/A	59	63
June 1–June 15	56	56	56	65	56	65	60	63
June 16– Aug 31				65		65		63
June 16– Aug 15	60	60	60		60		64	
Aug 16–Aug 31	58	58	58		58		62	
Sep 1–Sep 30	52	52	52	65	52	65	56	
Sep 1–Sep 8				N/A		N/A		63 - 58 ⁴
Sep 9–Sep 30				N/A		N/A		58
Oct 1–Nov 30	51	51	51	N/A	51	N/A	55	56
Dec1–Dec 31	<56	<56	<56	N/A	<56	N/A	55	56

Table 6.2-5. Water temperature requirements from Oroville Facilities construction through Proposed Project initial license period.

Date	1967 MOU (°F) ¹	1983 MOU (°F) ¹	2001 OCAP BO (°F) ¹	2004 OCAP BO (°F) ¹	EIR Proposed Project (°F)
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¹ A variance of +/- 4°F is allowed between April 1 and November 30 as measured at Feather River Fish Hatchery.

² Measured at the Feather River Fish Hatchery

³ Measured at Robinson Riffle.

⁴ Period of transition from first temperature to second.

Figure 6.2-4, extracted from the Oroville Relicensing report SP-F3.1 Task 2B, shows water temperature depth profiles near the Oroville Dam intake structure during the years from 1993 to 2002 for the months of May, June and July (the rice growth period sensitive to water temperatures). The water temperature depth profiles near the Oroville Dam intake structure demonstrate that, if not for the water temperature release requirements mandated by the fisheries agencies, the Project could deliver warmer water to the agricultural diverters.

Another factor in the evaluation of the cumulative effects of the Oroville Facilities and other projects on rice production is that since the construction of the Oroville Facilities, the rice production acres and average rice yields in the Feather River Service Area (FRSA) have increased. The increased yields and the increased acreage of rice plantings that have occurred since construction of the Oroville Facilities increases the opportunity for and the total quantity of rice yield losses that occur as a result of the water temperatures delivered by the Oroville Facilities.

Other changes that have occurred during the period of time since construction of the Oroville Facilities that affect the relationship between irrigation water temperatures and yield losses include the general adoption of the agricultural production practice of laser leveling fields and the implementation of holding periods for release of drain water from rice fields. Since the construction of the Oroville Facilities, rice farmers in general have increased water use efficiency by 38 percent (USA Rice Federation Website), which proportionately reduces the opportunity for cold water to be introduced into a field, which, in turn, reduces the potential for cold water-related rice yield losses. Additionally, application of some pesticides and fungicides adopted as common production practices during this period since construction of the Oroville Facilities require a water-holding period following application. The water-holding period also reduces the opportunity for cold water to be introduced into a field, which also reduces the potential for cold water-related rice yield losses.

Oroville Dam Face Water Temperature Depth Profiles 1993 to 2003

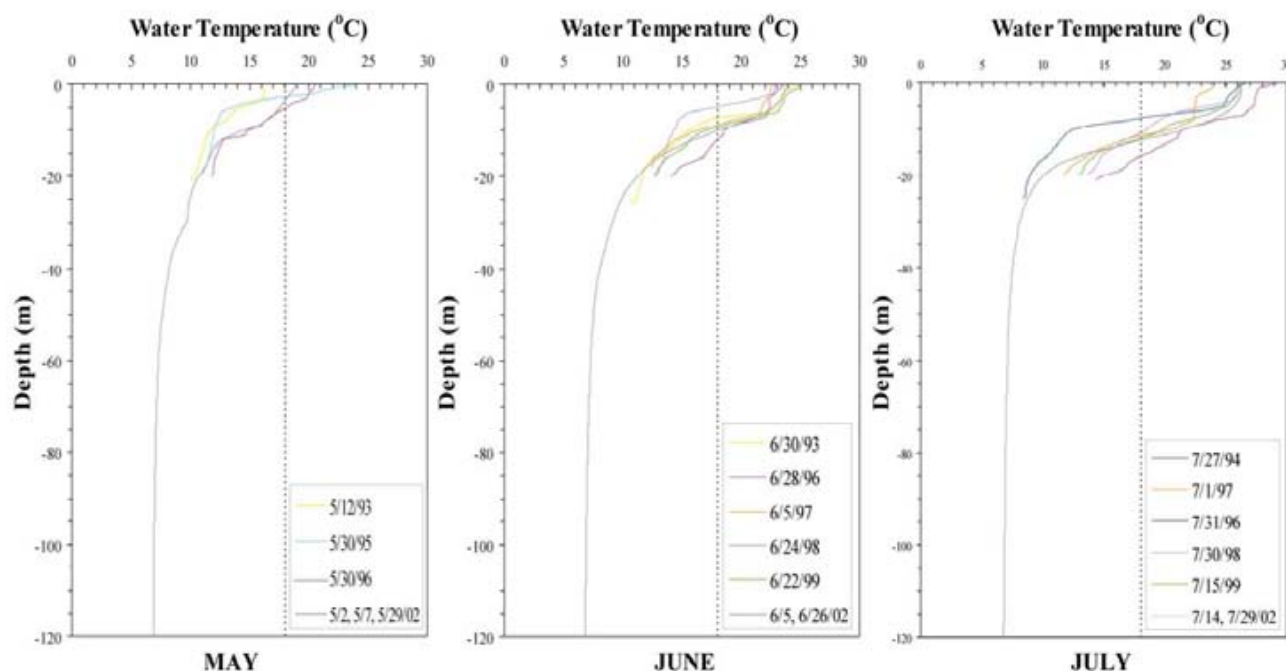


Figure 6.2-4. Oroville Dam face water temperature depth profiles 1993–2003 for the months of May, June, and July. (Water temperatures were recorded in °C for the original study and are depicted as such on the horizontal axis of the graphs (i.e., 0, 5, 10, 15, 20, 25°C), translated to °F the axis would read from left to right, 32, 41, 50, 59, 68, and 77°F).

6.2.11.2 Cumulative Effects of the Project Alternatives and Future Related Actions

No-Project Alternative

Under the No-Project Alternative, rice yield losses due to water temperature would be expected to continue at generally the same rate as currently occur under the Existing Conditions. Some hydroelectric facilities upstream of the Oroville Facilities are in the process of undergoing FERC relicensing, which may result in decreased water temperatures in the tributaries upstream of Oroville Reservoir that, in turn, would result in potential changes to cold water pool resources in the reservoir. The changes in the reservoir cold water pool resources would not be expected to result in changes to water temperatures at the agricultural diversions in Thermalito Afterbay during the May-through-July period as the foreseeable future release water temperatures are determined by the current 1983 DFG Operating Agreement and OCAP BOs.

Proposed Project

Under the Proposed Project, during the initial new license period, operations of Thermalito Afterbay are not expected to change substantially. As described in Section 5.13.4, lower water temperature targets at Robinson Riffle have the potential to result in a less than 2°F decrease in water temperatures at the agricultural diversions in Thermalito Afterbay. Water temperature reductions at Robinson Riffle do not necessarily directly equate to water temperature changes of the same magnitude at the agricultural diversions within Thermalito Afterbay. During the rice-water-temperature sensitive-growth stages, water temperatures at Robinson Riffle are at times more than 2°F cooler than the current water temperature requirements. These conditions would also occur in the same proportions under the Proposed Project, with no water temperature changes needed to meet the Proposed Project's water temperature objectives at Robinson Riffle relative to Existing Conditions. Therefore, under these conditions no change in the source water temperatures for Thermalito Afterbay would occur. For almost all conditions, water temperatures under Existing Conditions at Robinson Riffle are somewhat cooler than the current water temperature requirements. These conditions would also occur under the Proposed Project with probable water temperature reductions of less than 2°F, resulting in less than a 2°F reduction in the source water temperatures for Thermalito Afterbay during the May through July period.

When the magnitude of the Proposed Project water temperature change is put into perspective with the change in water temperature that occurred with the construction of the Oroville Facilities (see Figure 6.2-3), it is clear that the magnitude of the change in water temperatures from the Proposed Project are very small in comparison and result in water temperatures that would only infrequently be outside of the ranges of water temperatures that have occurred during previously observed operating periods. While DWR has no control over local land use planning, the substantially greater change in water temperatures that occurred with the construction of the Oroville Facilities did not result in the conversion of any farmland to non-farming uses, so it is reasonable to conclude that these small and infrequent reductions in water temperatures from the Proposed Project would also not result in the conversion of farmland to non-farming uses. Additionally, these decreases in water temperature at the agricultural diversions during the initial new license period would not be expected to substantially increase the amount of rice yield loss or increase the amount of rice production area affected by cold water exposure within the FRSA.

Future changes to water temperatures at the agricultural diversions after implementation of the potential future facilities modifications are uncertain and dependent upon which modifications or what combination of modifications could be selected. After the completion of any potential future facilities modifications designed to reduce water temperatures in the lower Feather River to benefit anadromous salmonids, it is likely that water temperature requirements in the lower Feather River would change relative to water temperature targets during the initial new license period. However, the analysis of the potential future facilities modification effects on water temperatures at the agricultural diversions in Section 5.2.2 concluded that the implementation of the potential future facilities modifications under the Proposed Project may result in either

beneficial or less-than-significant effects on agricultural—irrigation Basin Plan beneficial uses.

Since the initial new license period of the Proposed Project will reduce water temperatures only slightly and the Proposed Project potential facilities modifications were determined to result in either a less-than-significant effect or a potential beneficial effect on irrigated agriculture, when considered in combination, the Proposed Project initial new license period and post-potential facilities modification period would result in only a slight reduction in water temperatures or potentially a beneficial effect as compared to the existing condition.

FERC Staff Alternative

There are no substantive differences in cumulative effects on agricultural resources with the implementation of the FERC Staff Alternative as compared to the Proposed Project.

6.2.11.3 Climate Change and Agricultural Resources

Some changes in crop type, planting cycles, time of planting, and crop productivity would likely occur as the result of increased temperatures from climate change. Regional irrigation water demand may increase or decrease as the result of these changes. Several factors related to climate change, such as possible changes in humidity, cloudiness, wind, and increasing temperatures, could affect evapotranspiration rates and related water demand. Irrigation water temperatures may increase, coincident with source water temperature increase or increased rate of water warming, and this could affect future crop choices, especially with regard to water-temperature-sensitive crops. Crop yields currently impacted by cold water temperatures could increase as water temperatures increase.

CHAPTER 9.0, DISTRIBUTION LIST

Butte County Air Quality Management District has been added to the distribution list.

CHAPTER 11.0, LITERATURE CITED

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